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Evaluation of the Job Skills Education Program: Learning Outcomes

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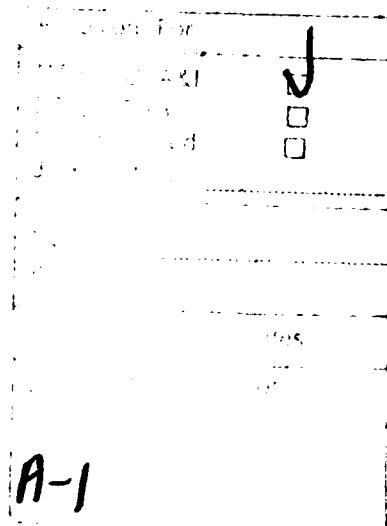
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FOREWORD

The Technologies for Skill Acquisition and Retention Technical Area of the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) performs research and development in education as part of its program. A major focus of this research is the development of information on which the Department of the Army can base decisions about its basic skills education programs. The work described in this report was conducted under Project A794, Education and Training, as part of Task 311, Improving Job Skills Education for Soldiers.

This report describes work carried out at the request of the Chief, Soldier Education Division, Total Army Personnel Agency, who requested that ARI evaluate the Job Skills Education Program (JSEP), a computer-based, job-relevant curriculum designed to teach soldiers competencies prerequisite to learning job skills. Researchers observed and gathered data on the program at seven Army installations at which it was being pilot-tested, and interviewed and administered questionnaires to program participants and administrators. Recommendations are offered for retaining, improving, and omitting features of the program.

This evaluation effort was supported by the Soldier Education Division, Total Army Personnel Agency, Office of the Deputy Chief of Staff for Personnel. Division staff members were provided with copies of the report in August 1988.

EVALUATION OF THE JOB SKILLS EDUCATION PROGRAM: LEARNING OUTCOMES

EXECUTIVE SUMMARY

Requirement:

The U.S. Army Research Institute for the Behavioral and Social Sciences was asked to provide a comprehensive, independent review of the Job Skills Education Program (JSEP). To accomplish this mission, the Army Research Institute contracted with the American Institutes for Research (AIR) to evaluate the effects and efficiency of JSEP, a program of computer-based instruction in the verbal and quantitative skills identified as prerequisite competencies for the 94 most densely populated Army Military Occupational Specialties (MOS). The program is not intended to teach job skills, but to instruct soldiers in language and mathematical skills required to perform their jobs successfully.

Of the 186 lessons comprising JSEP, 159 are computerized, on-line instruction and 27 are paper-based. Soldiers enrolling in JSEP are assigned a "prescription" that includes a core of lessons common to all MOS and additional lessons aimed at prerequisite competencies specific to the soldier's MOS.

Procedure:

AIR evaluated JSEP between January and April 1988 as it was pilot-tested at seven Army installations. Data were collected from all instructors and continuing education administrators involved with JSEP, 223 currently enrolled soldiers, 25 JSEP graduates, 4 soldiers who had dropped out of JSEP, and 15 supervisors of soldiers who had participated. Enrolled soldiers were pre- and posttested on an instrument developed by the Fort Lewis Education Center to predict performance on the General Technical (GT) composite of the Army Services Vocational Aptitude Battery. (Although GT improvement was not a stated goal of JSEP, this test was considered a useful estimate of the program's global effects on language and quantitative skills relevant to Army job performance.) At four of the sites (for 179 soldiers), JSEP's programming was adapted and we collected pre- and posttest information on each lesson attempted by a soldier and provided lesson-level performance and time-to-complete data. Soldiers and instructors responded to written questionnaires that examined their attitudes toward JSEP and asked for suggestions for its continued use and improvement. Finally, teams of evaluators spent 2 days at each site observing JSEP in use and interviewing participants in the program.

Findings:

Many soldiers were already competent in the skills of the JSEP lessons prescribed for their MOS. Half or more of the soldiers passed three fifths of the lessons on the

pretest (without any instruction). When soldiers failed the pretest and were assigned instruction, they generally mastered the content of the lessons they took. Almost four fifths of the on-line computer lessons were passed by 75% or more of the soldiers who failed the pretest and then took the instruction.

When pre- and posttest performance on the Fort Lewis test was expressed in GT terms, the 133 soldiers for whom data were complete showed an average gain of 3 points immediately following participation in JSEP. Instructors also forwarded actual GT scores achieved after JSEP (but with additional GT preparation) for about one third of the soldiers (69) following the evaluation. The average gain was 14 points. The evaluation concluded that JSEP, with supplementary instruction, was about as effective in raising GT scores as earlier evaluations had found Basic Skills Education Program (BSEP) to be, but that the effect was negligible without additional GT preparation. Again, while GT improvement is not a stated purpose of JSEP, it was the primary goal of 86% of the participating soldiers. Post-JSEP TABE (Test of Adult Basic Education) scores were provided by the instructors for 62 of the soldiers. Among these, reading improved about 0.6 grade levels and mathematics improved about 1.6 grade levels, on the average. While there was no additional instruction between the time soldiers completed JSEP and when they were administered the TABE, there was the possibility that unrecorded instruction had occurred between the time they were pretested and their enrollment in JSEP.

There was considerable variance in the time soldiers took to complete JSEP. The range for the first lesson (1a), for example, was from 8 minutes to 3 hours and 41 minutes. Half of the soldiers took 43 hours or less to complete the common core of 98 lessons embedded in every MOS prescription—but the soldiers passed the pretest for two thirds of these lessons and thus worked through the instruction for only about one third of them.

Although instructors had been asked to enroll any eligible soldier during the evaluation, the evaluation group had an average entry level of 10th grade in reading. Only one in four read below the 9th grade level, as measured by the TABE. The average mathematics score was at the 8.7 grade level with only 1 soldier in 10 scoring below 7th grade. These reading levels are almost as high as the terminal educational objectives of BSEP II. Because of these high levels, it is not possible to predict whether JSEP will be suitable for the soldiers traditionally served by Army basic skills programs. Within the relatively narrow achievement range observed, soldiers with lower TABE or GT scores passed fewer JSEP lessons on pretest and failed relatively more JSEP lessons after instruction. Thus, it seems probable that the lower a soldier's reading and mathematics achievement, the more relevant to his or her deficiencies, but also the more difficult, JSEP will be.

Soldiers almost invariably liked JSEP. They stated that the computer-based instruction was enjoyable, held their attention, allowed them to progress at their own pace, forced them to persevere in a task until they had mastered it, and allowed them to make mistakes in private. Soldiers said they enrolled in JSEP to improve their GT scores and generally thought the program would help to do this, although it was not designed

to improve GT and the empirical data indicated that it did not do so. All the JSEP instructors and educational administrators who were interviewed were aware that JSEP's purpose was to teach soldiers the verbal and quantitative skills prerequisite to MOS performance. However, these educators said that neither the soldiers nor the commanders who referred them to continuing education perceived this to be a need, and job performance improvement was not cited as a reason for enrolling in continuing education by any of the soldiers or their supervisors interviewed for the evaluation.

There were many reports of errors in lessons, lesson tests, and the programming of the soldier management system, but not all planned revisions had been instituted at the time of the evaluation. Soldiers and instructors said consistently that they wanted JSEP's programming amended to allow soldiers to see which items they had answered incorrectly on lesson tests. They also said that they wanted the rigidity or ambiguity of some test items changed and expressed the opinion that passing a lesson test often depended on factors other than a knowledge of the content. Instructors also expressed a strong need for the diagnostic test, still in development, that will determine which of the lessons in a prescription a soldier needs to take.

The major conclusion of the evaluation was that JSEP generally teaches what it sets out to teach, as measured by the individual lesson tests that are a part of the program. However, the soldiers in this evaluation knew much of the lesson content before JSEP instruction, and mastery of individual lesson content did not appear to have much effect on general verbal and quantitative competencies when these were measured by a test modeled after the GT composite. It was evident in the evaluation that JSEP's expressed purpose (improving academic competencies prerequisite to job performance) was not congruent with the goals of its potential users (improving GT score). The high entering basic skills achievement of the soldiers in this evaluation prevent us from saying whether JSEP can be used as a substitute for BSEP.

Unless there is clear and widely shared understanding of what JSEP is supposed to do, whom it is intended to serve, and how it is to be administered, the chances of the program surviving intact seem small. Without systematic guidance on JSEP's use, it is the opinion of the evaluators that the program will become a set of discrete lessons available through PLATO and will be used in a nonstandard manner to supplement other basic skills instruction.

Utilization of Findings:

Understanding that the goals of Army basic skills education change to meet new needs and external conditions, our major recommendation is that the Soldier Education Division reconsider the purposes and potential users of JSEP. Even if such reconsideration did not lead to a change in the program's stated functions and audiences, the exercise could increase agreement about how JSEP is to be used.

We also recommend that all lesson and lesson test revisions be implemented immediately. The military and civilian personnel we interviewed had a low tolerance

for errors and inefficiency and in our judgment even minor or moderate problems will lead them to reject JSEP *in toto*. For the same reason we feel it is important that the Soldier Education Division institute a maintenance program that will update JSEP to prevent obsolescence. Great care was taken in JSEP's design to select competencies that related to Army duties, and to use military language and situations in teaching these competencies. The same attention should be paid to "greening" JSEP's operations—reflecting Army values by making the program error-free, efficient, and up-to-date, and by showing explicitly how it relates to the mission of the Army and the individual soldier.

The lesson pretest option, introduced for the evaluation, should be retained and used to exempt soldiers from instruction in skills they already have, at least until the diagnostic test intended to serve this purpose has been completed and validated. The programming for JSEP should be modified to allow soldiers to see which lesson test items they have answered incorrectly, and additional test items should be developed so that the same questions are not presented to soldiers repeatedly.

We also recommend that the Soldier Education Division implement some form of monitoring system to examine the effects and efficiency of JSEP if and when it is in final programmatic form. Such action would provide the program with a summative evaluation and would help to keep it contemporary and relevant to Army needs.

EVALUATION OF THE JOB SKILLS EDUCATION PROGRAM: LEARNING OUTCOMES

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EVALUATION OF THE JOB SKILLS EDUCATION PROGRAM: LEARNING OUTCOMES

Chapter 1. Development of JSEP

Educational efforts of the size and complexity of the U. S. Army's Job Skills Education Program (JSEP) do not spring into existence overnight. This chapter describes briefly the development and current structure of JSEP as these provide the context for the present evaluation.

Events Leading to JSEP

Although JSEP began officially in October 1982 with an award through the U.S. Army Research Institute for the Behavioral and Social Sciences to Florida State University's Center for Educational Technology, the program's roots go back at least as far as January 1980. At that time the Department of the Army Adjutant General-Education (DAAG-ED) issued a letter on the topic of "Implementation of Army Continuing Education Policy and Recommendation Plan," which established a framework for improving the Army Continuing Education System. Following this, TRADOC Regulation 621-1, Basic Skills Education Program Curriculum Development Project, set forth the policies and procedures for redesigning the Army's Basic Skills Education Program (BSEP) in accordance with that plan (Hahn, 1985a). The original name for this program was Functional BSEP (FBSEP), but it was subsequently changed to Job Skills Education Program (JSEP) to emphasize the program's intended job relatedness. A major component in the BSEP curriculum development project was the identification of baseline skill requirements for soldiers at Skill Levels 1 and 2 (those holding the rank of E1 through E5) to be successful in their Military Occupational Specialties (MOSSs). Once these requisite skills were identified, the plan called for developing training materials and measurement instruments to ensure that the skills were mastered.

This initial MOS Baseline Skills Project was carried out by the RCA Services Company for TRADOC (Training and Doctrine Command). RCA examined the job tasks

associated with the 94 most densely populated MOSSs and those listed in the Soldier's Manual of Common Tasks. RCA then developed descriptors that minutely covered each step in performing these job tasks. The descriptors were analyzed qualitatively to develop a set of basic competencies that a soldier would need in order to learn and perform the target job tasks. From an initial 18-category taxonomy of prerequisite competencies, a final taxonomy of approximately 200 was developed.

RCA then constructed paper-and-pencil, multiple choice tests for the 128 competencies for which such tests were deemed suitable. The tests were to be used to diagnose individual soldier inadequacies so that each soldier would be assigned instruction in only those competencies in which a weakness had been identified (Hahn, 1985b). These multiple-choice tests were validated against another set of constructed-response tests measuring proficiency in the same competencies.

Since it would be impractical to administer 128 or more diagnostic tests of 10 to 15 items each to every soldier who was eligible for training, RCA produced a pair of 30-item Locator Tests. One test each was prepared in verbal skills and mathematics. The Locator Tests were used to predict whether a soldier would pass each of the available competency tests. Theoretically, with the knowledge of a soldier's MOS and the use of a limited number of diagnostic tests, it would be possible to prescribe an instructional sequence that included only the competencies in which the individual was weak.

Continuation Into JSEP

Although the final RCA products were not available to Florida State University when it began developing JSEP under the technical guidance of the U.S. Army Research Institute, and although Florida State University was not contractually bound to use the results of the RCA project, JSEP is to a large extent a logical continuation of the MOS Baseline Skills Project. Based on the reanalysis of some data, Florida State University redefined the taxonomy of prerequisite competencies and modified the match between some tests and the competencies. Florida State University then set about to develop instructional materials that would teach this modified taxonomy of prerequisite competencies. About half of the resulting lessons were planned to be on computer, although 159 of the current 186 lessons (85.5%) are written entirely or partially as

computer-based instruction¹. (The computerized format was considered inappropriate for some prerequisite competencies, and these are presented as paper-based lessons.) Florida State University and the Army Research Institute continue to field-test JSEP at the time of this report's writing. Soldiers at seven Army installations are working through JSEP lessons to evaluate revisions and editorial changes and to generate the data needed to produce diagnostic tests that will direct future learners to the appropriate lessons.

Reasons for JSEP

Several factors contributed to JSEP's being developed in the first place, and to the differences between JSEP other Army basic skills education programs (Farr, 1986). One of these was a recommendation from the General Accounting Office (GAO) that basic skills programs be standardized across Army installations to ensure quality and continuity for soldiers transferred from one post to another. This was complemented by a congressional mandate that any education offered during duty hours be job-related. Finally, the Army Science Board had recommended that educational programs take advantage of new instructional technology. JSEP has several characteristics that respond directly to these influences:

- JSEP is based upon the verbal and quantitative competencies identified as prerequisites for the most widely filled Army MOSs. Converting Julian dates to Gregorian dates, for example, is considered a prerequisite quantitative competency for MOS 55B, Ammunition Specialist. JSEP is not really a "basic skills program" if such programs are defined as teaching the entire body of skills and knowledge comprising an academic area. Nor is JSEP intended to remedy extensive deficiencies; it will not teach reading to a functionally illiterate adult. It is designed, however, to teach specific reading skills called on in the performance of common MOSs, such as locating documents by their code and title or understanding communication and navigation words common to the Army.

¹Table A.1, Appendix A, shows 186 lessons written, 1 lesson not available, and 1 lesson not written, for a total of 188.

- On the other hand, JSEP is not job training. It may teach the reading and mathematical skills needed to use a tank repair manual, but it will not train a soldier to repair a tank. While the instruction was "greened," or made Army relevant where possible, it still largely teaches verbal and mathematical skills, not job skills.
- JSEP is computer-based instruction. It includes lessons and instructional management software that determines what instructional materials are presented to the soldier. A complete "prescription" of lessons is selected on the basis of the soldier's MOS. Progress through this prescription is controlled by internal constraints (some lessons are prerequisites to others) and by the soldier's performance. Repeated inability to master a lesson will shunt a soldier out of the system for instructor assistance. Otherwise the system is designed to require little instructor intervention, which reduces variability across sites. The management system makes it theoretically possible for a soldier to complete one lesson at a post in Georgia and begin the next at a new post in Germany.

Description of JSEP

JSEP includes two kinds of lessons: content lessons and learning strategy lessons. It also has both computerized and paper formats. The following paragraphs are intended as a brief overview for readers who are not familiar with JSEP. For a comprehensive written description of the program, please see the JSEP Instructor's Manual (Schroedl and Branson, 1987).

Content Lessons

By far the largest part of the program, the content consists of 186 prerequisite competency lessons distributed across 33 series.² Table A.1, printed in Appendix A because of its length, lists these in abbreviated form. The first series, for example, is on

²Descriptions of JSEP reflect the program during the evaluation period of January-April 1988. Not all lessons were in their final form at that time.

Numbering and Counting and includes lessons on such prerequisite competencies as matching numerals with their names and rounding whole and decimal numbers.

Instructionally, there are two kinds of content lessons that may be used to teach a prerequisite competency. Diagnostic Review Lessons assume the soldier once knew the material but cannot recall it. These lessons are relatively short; as their name implies, they are designed to provide a review of content and to diagnose whether further instruction is needed. All computer-instructed competencies include Diagnostic Review Lessons.

Many computer-based competencies also include Skill Development Lessons. These longer lessons assume that the material is new to the learner. They are more detailed and tutorial in form than their Diagnostic Review counterparts. Most, but not all, prerequisite competencies have Skill Development Lessons.

The standard instructional format has a soldier begin with the Diagnostic Review Lesson of a prerequisite competency assigned on the basis of his or her primary or secondary MOS³. The soldier takes a short, computer-administered test at the end of the Diagnostic Review Lesson. Soldiers who pass this test are routed to choose another lesson in their prescription. Those who fail are moved into the prerequisite competency's Skill Development Lesson. If soldiers fail the exit test after two attempts at this longer lesson, or if there is no Skill Development Lesson for the competency, the instructional management system refers them to the human instructor for assistance.

The number of test items and the passing score for each lesson are shown on Table A.1. The passing scores and usually the test items are the same for both Diagnostic Review and Skill Development Lessons. The modal test contains 10 items and has a passing score of 80 percent correct.

A third piece of information displayed on Table A.1 is each lesson's revision status at the time of the evaluation. A "Y" showing that the revision process was completed indicates that the lesson had been attempted by 10 or more soldiers, reviewed by the Army Research Institute and participants at the Army installations field-testing JSEP,

³The procedures in place during the evaluation differed somewhat from this description.

reviewed and revised (if necessary) by Florida State University, and returned to the Army Research Institute. (This description collapses 15 steps between the initial draft and the final lesson.) For lessons marked with an "N," the process had been begun but was not completed by January 1988. Either one or both lessons was not in its final form for 95 (51%) of the prerequisite competencies at the time of the evaluation.

Kinds of Formats

Both Diagnostic Review and Skill Development Lessons can be presented in a mix of computerized and paper formats. Most lessons are completely computerized. Some (27, or 14.5 percent) are completely paper based. A few (5, or 2.7 percent) have some mix of formats. They may include a computerized lesson with a paper based test or a computerized Diagnostic Review Lesson and a paper Skill Development Lesson. Finally, computerized lessons may assign paper supplementary materials to be used with on-line computer instruction and testing. Lesson 28d, which requires using information from tables or charts to locate a malfunction, is an example of the mixed paper and on-line format.

Learning Strategy Lessons

There are five modules that are concerned with learning strategies rather than MOS-related content. Their function is to teach soldiers how to learn. The Time Management module is assigned by the JSEP management system to every soldier as he or she begins a JSEP prescription. The remaining four learning strategies will be assigned automatically once a soldier fails a given number of tests or may be assigned by the instructor. These modules are Reading Strategies, Problem Solving (mathematics), Test-Taking, and Motivational Skills. The JSEP management system, for example, assigns the Reading Strategies Module when a soldier fails five tests that have a predetermined verbal content.

PLATO and MicroTICCIT Systems

One final distinction must be made in order to understand the JSEP evaluation. This is the difference between the PLATO and MicroTICCIT systems through which JSEP was offered during the evaluation. PLATO is the computer system used at most Army Education Centers. Sites using the PLATO system had computer terminals linked to a

central computer at one of two sites (Fort Leavenworth or Fort Belvoir). The MicroTICCIT system was composed of IBM personal computers operating from a minicomputer at the individual site. Two of the seven pilot sites used the MicroTICCIT system. Because PLATO was used by a larger sample of soldiers and because it was possible to collect data on soldiers' lesson-level performance in the PLATO system, the PLATO-offered version of JSEP has received the most attention in this report.

This chapter has sketched the conditions under which JSEP developed and the major characteristics of the program. The program and its context in turn determined the design of the evaluation, which is presented in the next chapter.

Chapter 2. Conducting the Evaluation

Developing a Useful Design

A basic tenet of AIR's approach to program evaluation is that each evaluation should be conceptualized as a step in building a solution to a problem, rather than as an isolated measure of how much a problem has been reduced (AIR, 1986). Viewing evaluation as a method for problem solution leads to studies that emphasize understanding the causes, contexts and effects associated with programs so that each subsequent program attempt, as it is informed by evaluation findings, is more effective and efficient. Evaluations that focus on problem reduction, however, are strictly judgmental rather than explanatory. Each problem reduction evaluation is undertaken in an unconnected, yes-no framework that may tell whether the program works, but that gives very little information to guide future improvements or suggest alternative treatments.

JSEP as a Solution to a Problem

JSEP is a good example with which to contrast the problem solution and problem reduction approaches. JSEP was designed on the assumption that limited proficiency in basic academic skills identified as prerequisite competencies prevents soldiers from successfully learning and performing their MOS job tasks. A problem reduction approach to evaluation would seek to determine whether remedial basic skills courses led to improved MOS task performance. This seems a plausible and useful question, but it has two basic flaws. The first is that it assumes that basic skill proficiency is enough in itself to improve military job performance -- an assumption that should be tested, not accepted automatically. The front-end task analysis that was accomplished before JSEP was initiated did not explore empirically the relationship between basic skills mastery and competency in military jobs. There is a real possibility that learning the prerequisite competencies for an MOS will not of itself bring about better MOS performance.

The second flaw is that the question, "Was the program enough?" is of little help to the policy maker or program planner if the answer is "No." It provides no insights about the myriad of other factors that could affect MOS performance and does not give the planner any place to go except "back to the drawing board."

An evaluation based upon the solution building approach, in contrast, would conceptually break JSEP into its logical steps and examine each one in turn. It would accept the initial assumption that basic academic competencies are a necessary prerequisite to learning and performing MOSs, but not the subsequent assumption that they are sufficient on their own to guarantee success. In AIR's solution building approach, we assume that a given program treats but one component of the problem it addresses. For the JSEP evaluation this led to the primary question of whether participation in remedial education in basic academic competencies (JSEP) improved performance in these competencies. This meant that the JSEP lessons and prescriptions would be evaluated on the specific outcomes they were intended to produce, namely an increased proficiency in the prerequisite competencies it taught, and not on other desirable outcomes, such as improved MOS task performance, that could be dependent upon factors in addition to JSEP.

Incremental Knowledge Building

The preceding argument has methodological strengths, but it will not fully meet policy makers' and administrators' information needs unless evaluation is seen as a continuing process and not a single study. The Army does not support JSEP merely to increase soldiers' proficiency in selected areas of language and mathematics. The ultimate goal is to ensure competent job performance. It seems plausible that other program components in addition to JSEP will play a role in reaching this goal: the nature of the population pool from which recruits are drawn, the instructional technology used in MOS training, changes in the nature of Army jobs, to name but a few possibilities. Thus, an ongoing evaluative process might begin by determining whether JSEP was improving prerequisite competencies and by pinpointing weaknesses that kept it from doing so, but it would not stop there. It would also help identify the next important steps to add to the solution process. For maximum effect a program of evaluation should be incremental in nature.

The first step in an incremental evaluation is to determine the extent to which a program has achieved its most direct and immediate objectives. The next step is contingent upon the outcomes of the first. If the program is not doing what it was intended to do, the evaluation moves backwards to determine where the course is breaking down and what can be done to make it operate smoothly. If the immediate objectives are being met, the evaluation moves forward to examine the effects of these outcomes on the more distal program goals. This progression for JSEP might begin by determining whether instruction improved soldiers' performance on the program's lesson tests of specific prerequisite competencies; then move to examining whether program graduates could use these competencies in a more realistic setting; then examine whether mastery of these competencies was related to quality of MOS performance; and so on, testing each link in the causal chain from prerequisite competency to MOS.

Incremental Model for JSEP

In our previous evaluations of Army Continuing Education programs, AIR developed a conceptual model for a quality control system that would fuel an incremental evaluation or monitoring process for the Army's remedial education efforts. The major functions are shown in Figure 2.1, and the model was intended to serve as the guide for this evaluation. Following this model would have "piloted" a system for data collection and use that we had recommended the Army Continuing Education System adopt (AIR, 1984). It also would have established the groundwork for an incremental evaluation to determine JSEP's eventual effects on MOS performance.

Unfortunately, conducting the JSEP evaluation according to the proposed quality control system model was not possible. Doing so required several program conditions that could not be met within the time available for the evaluation.

Limitations on the Evaluation

Applying the quality control system required that all JSEP lessons and lesson tests, the computerized instructional management system, and diagnostic or placement measures be completed and in use at the beginning of the evaluation, which was originally proposed to extend from 1 April 1987 through 31 March 1988. The JSEP evaluation actually began data collection on 19 January 1988. At that time about 30 percent of the lessons had not

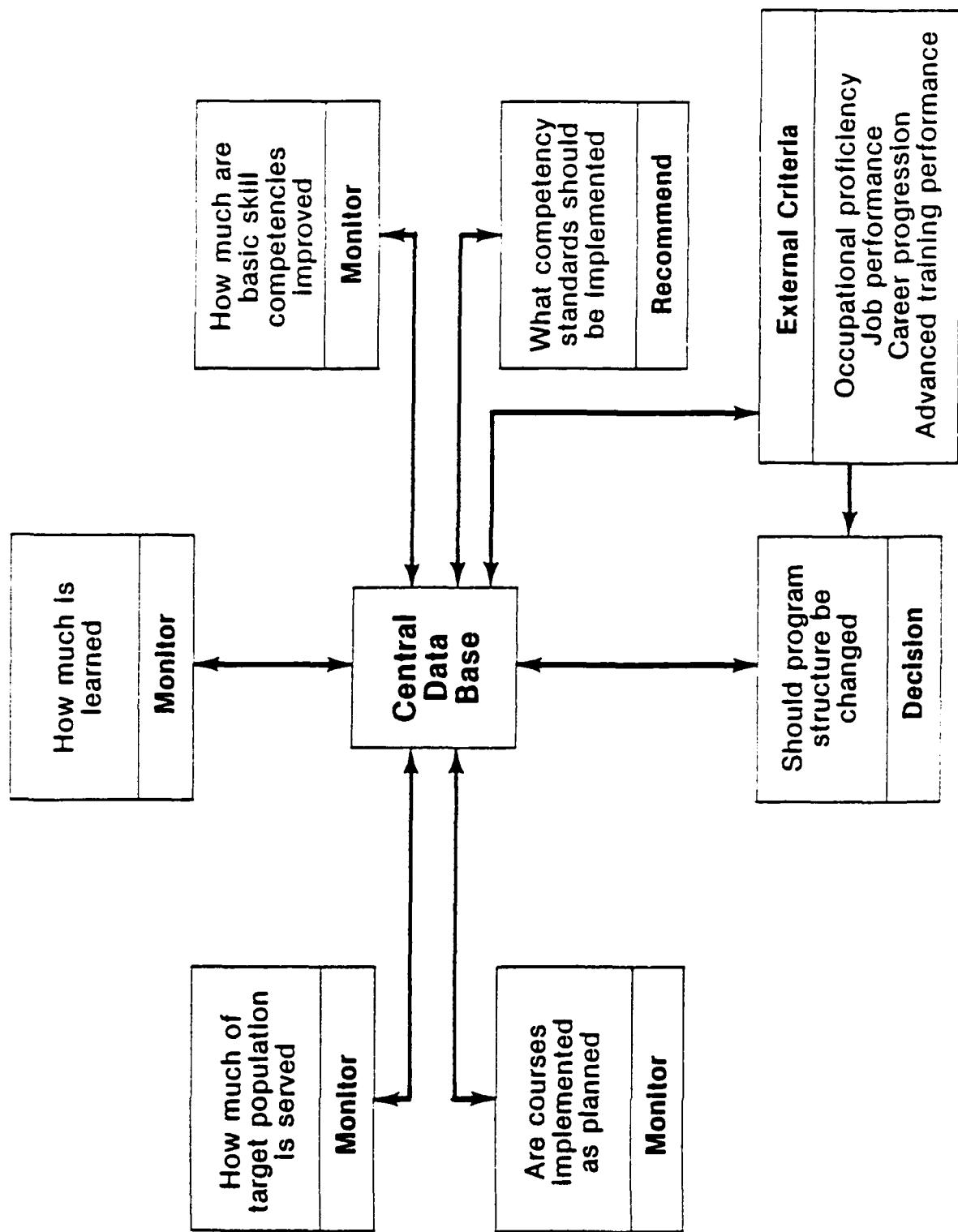


Figure 2.1. Functions of Proposed Quality Control System

undergone the entire review and revision process, several functions of the management system had not been introduced, and there were no diagnostic procedures. In fact, diagnostic test validation activities began simultaneously with the program evaluation. These problems led to a secondary constraint upon the evaluation. Because pilot sites had been called upon for so much assistance in developing JSEP, both the evaluators and their clients recognized a need to limit the evaluation burden. The data collection period was thus reduced to 90 days.

These constraints limited the extent to which the quality control system model could drive the evaluation. It was possible to collect information about whether courses were implemented as planned and how much was learned (see figure 2.1). However, the question of the extent to which the target population was being served was moot. Because JSEP was still in a developmental stage, the number of program participants was limited to the number of computer work stations at each pilot site. Time constraints made it impossible to look at another aspect in quality control: whether JSEP satisfied external criteria such as enhancing occupational proficiency or career progression. These outcomes could not be reasonably expected in a 90-day period.

Logical and logistical problems prevented us from clearly determining how much basic skill competencies had been improved, or recommending competency standards or structural program changes. While there were short (10 item or so) tests for each JSEP lesson, there was no general measure of all the prerequisite competencies. Nor was there a body of research clearly linking mastery of the JSEP-identified competencies with performance on Army ability tests (such as the General Technical composite, the GT) or tests of basic skills (such as the TABE, Tests of Adult Basic Education) that had a role in the career and educational futures of JSEP-eligible soldiers. Without this empirical evidence we were limited in how much we could say about JSEP's effects on basic skill competencies in general, and it would have been irresponsible to even attempt recommending competency standards for the program. These constraints limited in their turn the judgments we could make about the efficiency of the program's overall structure.

Revisions in evaluation design. Recognizing the impact that these situational constraints had upon the proposed evaluation and other activities, the Chief of the Soldier Education Division, Office of the Deputy Chief of Staff for Personnel (ODCSPER), called a meeting of contractors, pilot site staff persons, and staff of the Education Division and

the Army Research Institute on 5 - 7 December 1987. The group discussed upcoming JSEP demonstration, evaluation and test validation activities. AIR presented a revised evaluation plan at that meeting, one which did not change the original purposes of the evaluation but which adapted the scope of activities to the constraints of limited time and information. This plan was agreed to by the meeting participants and accepted by the Army Research Institute, which had contracted for the evaluation with AIR. Because the evaluation, as it was conducted, differed somewhat from that originally proposed, a brief summary is offered here.

Components of the Evaluation Design

Purpose and Questions

The evaluation's purpose was to assist the Army Research Institute in providing a comprehensive, independent review of the effectiveness of JSEP. In order to do so, the evaluation addressed several major questions:

- Does JSEP teach what it sets out to teach?
Does soldiers' performance on tests of specific prerequisite competencies change following instruction in those competencies? What proportion of soldiers master the competencies following instruction?
- What effect does JSEP have on academic requirements for job performance? Do soldiers master the lessons comprising a complete MOS-related prescription? Does performance on a global measure of language and mathematics change following participation in JSEP? Do supervisors report changes in soldiers' MOS performance?
- Does JSEP work as it was intended to?
What numbers and types of soldiers use JSEP successfully? How long does it take to complete a JSEP prescription? How do soldiers, supervisors, and instructors rate JSEP's effectiveness and efficiency?

- What principles of instructional design do the JSEP lessons and support materials incorporate? Do the lessons demonstrate clear purpose, organization, and presentation of content? Do textual support materials, such as the JSEP Instructor's Manual, meet the purposes for which they were written?

Evaluation Audiences

AIR has conducted this evaluation for the Army Research Institute, which is responsible for identifying audiences and authorizing, or conducting, the distribution of evaluation findings. Thus, staff of the Army Research Institute were asked to review plans for data analysis and report design and to suggest ways in which the information could be presented in the most useful manner.

Structure and Activities of the Evaluation

The evaluation used a single-group, pretest-posttest design. Information was collected from soldiers before, during, and at the end of their participation in JSEP. This was an acceptable approach since we were not concerned with comparing JSEP to another program, and we felt reasonably certain that any change in skills or attitudes could be attributed to JSEP rather than external conditions.

Conditions of the evaluation. A logistical constraint affecting the evaluation was the desire to place as little burden as possible upon the voluntarily participating sites. Hence, existing data were used wherever possible. The data collection period was limited to 90 days between 19 January and 15 April 1988. Sites later were given the option of extending the final date to 6 May in order to provide complete information for soldiers who had enrolled near the end of the evaluation period.

The JSEP instructors were told to literally "go by the book" during the evaluation period, to follow the procedures outlined in the JSEP Instructor's Manual and intervene as little as possible in soldiers' learning. They were asked to assign soldiers to existing JSEP prescriptions and not to design prescriptions on their own. Instructors also were asked not to use any supplementary materials or instruction until soldiers had exited JSEP, on the argument that the evaluation was intended to test "pure JSEP." Finally,

instructors were directed to enroll eligible soldiers regardless of their reading and mathematics achievement levels. Eligibility was operationally defined as referral of a Skill Level 1 or 2 soldier due to a lack of the basic skills to successfully carry out his or her MOS or to meet job and reenlistment qualification criteria on other Army tests.

The JSEP management system for the sites using the PLATO system was modified during the evaluation to pretest soldiers before they attempted each lesson. Soldiers passing a pretest were routed out of the lesson and told to choose another from their prescription. Those failing the pretest were guided into the lesson's instructional content. Adding this pretest option meant that participants were given only two attempts (rather than the standard three) at the Skill Development Lesson, if one existed for the prerequisite competency. The MicroTICCIT system was not modified to administer a pretest, and so the data collected from PLATO and MicroTICCIT sites were not comparable. Prerequisite competency performance data presented in this report are limited to the PLATO sites.

Participants. Seven JSEP programs were included in the evaluation. Two of these sites, Fort Lewis and Fort Riley, used the MicroTICCIT system. Fort Lewis had worked with JSEP since September 1985, Fort Riley since July 1985. The five remaining sites used the PLATO system. Of these, Fort Leonard Wood, beginning with JSEP in July 1985, and Fort Sill (since August 1986), were the original development sites. Fort Bliss and Fort Jackson joined the pilot group in the summer of 1987, and Walter Reed Army Medical Center began using JSEP during the evaluation period. Participation was formally requested by the Chief of the Soldier Education Division, and agreed to by all sites. All soldiers enrolling in JSEP between 19 January and 15 April 1988 were included in the evaluation data base. Their characteristics are discussed in Chapter 4.

Other participants included supervisors of current or past JSEP students, a sample of soldiers who had completed JSEP before the evaluation, and local Education Center staff and JSEP instructors.

Sources of data. There were three major kinds of information: that collected automatically as a routine part of JSEP's operations, that collected by the JSEP instructors, and information gained from our observations and interviews of JSEP participants or review of JSEP materials.

The modified management system for JSEP at the PLATO sites automatically collected background information about soldiers and recorded the test scores, pass/fail status, and time taken in each lesson that a participant attempted. Florida State University performed this modification and created an evaluation data set to which AIR had access.

Because information about paper-based lessons was not collected automatically by the JSEP management system, instructors maintained logs on which they noted paper lessons attempted and test scores for each soldier. The logs included information about reasons for exiting the program (completed prescription, dropped out, and so forth) and notes of any supplementary instruction provided to the soldier. Data from the logs were added to the lesson-level data sets.

Instructors pretested and posttested soldiers with the General Academic Predictor Test, a test developed by the Education Center staff at Fort Lewis to parallel the tests comprising the GT composite of the Armed Services Vocational Aptitude Battery. Education Center staff persons from the JSEP pilot sites had used this test for several years with BSEP and vouched for its validity and reliability. This test served as the global measure of verbal and mathematics achievement change following participation in JSEP. The two forms of the test were counterbalanced in their administration. Four sites pretested soldiers with Form A and posttested them with Form B, while the schedule was reversed for the other three sites. The difficulty of the two forms was found to be not equivalent and so AIR equated the scores by using results from the Locator Test that Florida State University administered as a pretest. Equating the difficulties prevented test differences from artificially inflating or deflating gains. Pretest and posttest scores for the General Academic Predictor (GAP) Test were added to the soldier records on the data set.

Soldiers responded to a Post-JSEP Attitude Survey when they completed the program. This paper-and-pencil instrument included questions about the soldier's evaluation of JSEP, reasons for participating in it, perceived gains, and similar topics. Instructors administered these surveys and returned them to AIR for analysis. Finally, instructors completed a short paper-and-pencil survey giving their own evaluation of JSEP and recommendations concerning the program. (Copies of these instruments are included in

Appendix B.) All forms and tests used in the evaluation were provided to the sites by AIR or the Army Research Institute.

AIR staff visited each of the seven evaluation sites. For six of the pilot installations, a team of two evaluators spent two or two and one-half days observing JSEP instruction and interviewing a range of participants. We typically talked with soldiers enrolled in JSEP, soldiers who had completed JSEP, supervisors of both kinds of soldier, and instructors, counselors, and administrators in the local Education Centers. The interviews were arranged by the JSEP Coordinator at each site. The only cases in which we might have talked with a nonrepresentative sample were those of JSEP graduates or soldiers' supervisors. In other cases we interviewed or sampled the entire existing population (which was usually no larger than 10 students or three counselors). From our observations the only bias that could have entered into the selection of graduates or supervisors to interview was that of availability. We asked a standard set of core questions at each site, but did not limit interviews to these predetermined questions.

Walter Reed Army Medical Center was not treated in the same way as other sites because of its late acquisition of JSEP. Instead, it served as an observational "laboratory" for the AIR evaluator who was reviewing JSEP lessons. Through the cooperation of Walter Reed staff and soldiers she was able to check her perceptions of the lessons with those of actual students.

The Army Research Institute and Florida State University provided AIR with copies of text materials to review and with access to JSEP lessons on the PLATO system. These are discussed in detail in the second volume of this report, Part II Curriculum Review.

Scoring and equating the GAP Test. The GAP Test was originally developed to predict BSEP graduates' performance on the GT. Calculating scores on the GAP involved several steps. Raw scores on the verbal and arithmetic sections were converted to standard scores; these were then summed for the two subject areas; and the resulting single number score was in turn converted to an equivalent on the GT.

In the JSEP evaluation, soldiers at four sites were pretested on Form A of the GAP and posttested on Form B. The order was reversed at the other three sites. Each

student was also pretested with a single form of the Locator Test, which measured the same areas (verbal and arithmetic) as the GAP.

Correlating the GAP and Locator Test pretest scores revealed that the two forms of the GAP were not equally difficult. The discrepancy was limited to the verbal section of the GAP, with that part of form A appearing somewhat more difficult than Form B.

In order to make findings from the GAP comparable across the evaluation sites, we had to adjust the GAP scores so that the two forms were of equal difficulty. The procedure was basically that of converting scores on the verbal sections of Form A and B to the same standard. (Conceptually, this was a bit like converting Fahrenheit to centigrade so that readings on different thermometers would agree when they measured the same temperature.) Using the standard scores (to which raw scores had been converted) we calculated the pretest mean and standard deviation on the verbal section for Form A (mean=45.47; sd=5.55) and Form B (mean=45.82; sd=4.95). We then produced a conversion factor using the formula:

$$\frac{\text{Mean A} - \text{Mean B}}{\text{SD}_a / \text{SD}_b} = \frac{45.47 - 45.82}{5.55 / 4.95} = \frac{-0.35}{1.12} = 0.3$$

We had determined that Form A was more difficult than Form B, and the conversion factor indicated that the difference was 0.3 standard deviations. In other words, if the tests were not adjusted, soldiers who took Form A would probably achieve a score 1.5 points ($0.3 \times 4.95 = 1.485$) lower than if they had taken Form B. Therefore, to make the two tests equivalent in difficulty, we added 1.5 to the standard score on the verbal section for all Form A scores, pretest and posttest.

We must make one more point here. This adjustment ensured only that the two forms of the GAP were about equal in difficulty. Equating did not affect the GAP's relationship to the GT it was designed to mimic. Anecdotal reports from JSEP instructors, and informal review of GT scores from soldiers tested after completing JSEP, suggest that the GAP is more difficult than the GT. The correlation between the entering GT scores and pre-JSEP GAP Test scores for the soldiers in this evaluation was 0.24; statistically unlikely to have occurred by chance, but still a relatively weak relationship. Whether this relationship reflects actual differences between the two tests or incidental learning that

had taken place between the times each was administered cannot be determined. The correlation between the post-JSEP GAP and GT for 61 soldiers was a slightly higher 0.33.

Data management and analysis. AIR reviewed data collected automatically on JSEP for any anomalies or unexpected values, and referred questions about these to Florida State University for resolution. Data processed by AIR, such as GAP Test scores, were verified and examined for unexpected outlier values. Both members of each site visit team wrote their field notes independently and then reviewed the pooled notes to identify any areas of confusion or disagreement.

Quantitative data were analyzed using the Statistical Analysis System (SAS) or the Statistical Package for the Social Sciences (SPSS). The specific procedures and tests used are noted for each set of findings.

The chapters that follow present the findings collected through these evaluation activities and address the evaluation questions. Chapter 3 presents the quantitative analyses of soldier performance data. Chapter 4 combines the site visit and interview data with the results of attitudinal surveys to provide an explanatory context for the performance results.

Chapter 3. JSEP Learning Outcomes

The background characteristics, overall reading and mathematics achievement, and lesson-level performance of soldiers in the JSEP evaluation are reported in this chapter. The discussion begins by describing the soldiers in the evaluation so that the reader may judge how generalizable the findings are.

Soldiers Participating in Evaluation

As we described in Chapter 2, during the evaluation the automated soldier management system was altered by Florida State University to collect lesson-level pretest and other data from soldiers using JSEP at PLATO sites. We were able to retrieve information on 179 soldiers from four of these five sites. (Unfortunately, the data from Walter Reed Army Medical Center could not be merged with those from other sites.) An additional group of 44 soldiers provided more limited data from the two MicroTICCIT sites. The performance data presented in this chapter are drawn from the four PLATO sites from which lesson-level information was available, unless otherwise noted⁴.

The background characteristics of the 179 soldiers enrolled in JSEP during the evaluation are shown on Table 3.1. The largest number (88) came from Fort Sill, and about 85 percent were male. Slightly over half (53%) were black; somewhat fewer than one in five (18%) reported earlier experience in BSEP.

The largest number of soldiers (88%) reported having completed exactly 12 years of formal education. Only 2 percent had less schooling than this. The group was generally young, with four out of five (80%) in the age 20 to 29 category. In accord with this age distribution, the most commonly reported rank was E4 (44%), followed by E5 (22%) and E3

⁴Although learning outcome and lesson-level data from MicroTICCIT participants were not used in this report, they were forwarded informally to the Army Research Institute.

Table 3.1. Background Characteristics of
JSEP Evaluation Participants (N=179)

<u>Characteristic</u>	<u>Number</u>	<u>Percent</u>
Site		
Fort Sill	88	49.2
Fort Bliss	37	20.7
Fort Jackson	34	19.0
Fort Leonard Wood	20	11.2
Gender		
Male	151	84.4
Female	28	15.6
Ethnic Background		
Black	94	53.4
White	61	34.7
Other	21	11.9
Missing data	3	--
Years of Education		
Fewer than 12 years	3	1.9
12 years	143	88.3
13 to 15 years	15	9.3
16 years	1	0.6
Missing data	17	--
Prior BSEP Enrollment		
Yes	33	18.4
No	146	81.6
Age		
19 or younger	12	6.7
20 to 29	142	79.8
30 to 39	24	13.5
Missing data	1	--
Rank		
E1	1	0.6
E2	13	7.4
E3	35	19.9
E4	78	44.3
E5	38	21.6
E6	11	6.3
Missing data	3	--

Table 3.1. (Cont.) Background Characteristics
of JSEP Evaluation Participants (N=179)

<u>Characteristic</u>	<u>Number</u>	<u>Percent</u>
Years in Service (Mean=3.9)		
Less than 1	23	13.2
1	43	24.7
2	30	17.2
3	19	10.9
4	10	5.7
5	13	7.5
6	5	2.9
7	4	2.3
8	7	4.0
10 or more	20	11.6
Years to Separation (Mean=1.8)		
Less than 1	51	30.4
1	58	34.5
2	30	17.9
3	14	8.3
4	8	4.8
5	7	4.2
Missing data	11	--

(20%). The soldiers reported an average of 3.9 years experience in the Armed Services, with about half (55%) having served two or fewer years. On the average they reported 1.8 years to separation, with two out of three (65%) listing expected separation dates less than two years away.

Table 3.2 lists the background achievement levels of the participating soldiers. The average pre-JSEP GT score for the group was 92.8, with about one in five (19%) soldiers meeting the criterion of 100 generally required for reenlistment eligibility. Scores on the Tests of Adult Basic Education (TABE) were available for three-fourths of the group (75%). Among these soldiers, the average reading score was at the 10.0 grade level and the average mathematics score was at the 8.7 grade level. As a benchmark of what these scores mean, Army Regulation 621-5 sets as its objective for BSEP II the achievement of scale scores equivalent to the 10.1 grade level in reading and math by 20 percent or more of the graduates. TABE language scores, reported for a smaller number of participants (61%), averaged 8.7 grade level.

In summary, the educational background of these soldiers was higher than had been expected -- almost all had completed high school and most read at a tenth grade level or better -- but was generally within the parameters established for JSEP eligibility. Those criteria, stated in an August 1987 memorandum from the Soldier Education Division, said that soldiers would be eligible for instruction if they did not attain the cut score on the JSEP pretest (no such test was in effect at the time of the evaluation) or did not meet reenlistment requirements. Since a GT score of 100 or better is a common reenlistment requirement, 81 percent of the group was eligible for JSEP on the basis of this criterion. The other 19 percent may well have met an additional reenlistment criterion that was not recorded.

Measuring Soldier Performance

Two levels of information about academic performance were collected for the soldiers participating in the evaluation. One consisted of the lesson-level data recorded automatically by JSEP's soldier management system. The other, discussed in the following paragraphs, included more global information about reading and mathematics achievement collected by the GAP Test, which was designed to parallel the GT.

Table 3.2. Entry Academic Achievement
Levels of Soldiers (N=179)

Test/Area	Number	Percent	Mean	SD
ASVAB/GT Range			92.8	12.4
0--49	2	1.2		
50--69	--	--		
70--89	55	32.2		
90--99	82	48.0		
100--109	28	16.4		
110 or above	4	2.3		
Missing data	8	--		
TABE/Reading Range			10.0	1.5
Grade 5.0--6.9	4	3.0		
Grade 7.0--8.9	31	23.0		
Grade 9.0--10.9	70	51.9		
Grade 11.0--12.9	30	22.2		
Missing data	44	--		
TABE/Math Range			8.7	1.6
Below grade 5.0	1	0.7		
Grade 5.0--6.9	12	8.9		
Grade 7.0--8.9	70	51.9		
Grade 9.0--10.9	38	28.1		
Grade 11.0--12.9	14	10.4		
Missing data	44	--		
TABE/Language Range			8.7	1.8
Grade 5.0--6.9	17	15.6		
Grade 7.0--8.9	50	45.9		
Grade 9.0--10.9	31	28.4		
Grade 11.0--12.9	11	10.1		
Missing data	70	--		

Pre- and post-JSEP tests. The JSEP instructors administered the GAP Test to evaluation participants immediately before they began and after they completed their JSEP prescriptions. Chapter 2 discusses this test and notes that there was a difference in the difficulty of the two forms that were used. The information reported in this chapter is based upon GAP scores adjusted to equate the two forms; this was done so that changes measured by the tests would not be inaccurately inflated or depressed.

Performance Change: GAP Results

The results for the GAP are shown on Table 3.3. Although pretests were reported for 171 of the soldiers, the evaluation ended before they had all completed their prescriptions, and posttest results were thus available for only 133. Changes were calculated by subtracting an individual's pretest score from his or her posttest score, excluding soldiers for whom only one test score was given.

Table 3.3. Pre- and Post-JSEP Performance on General Academic Predictor Test (N=179)

<u>Scores</u>	Pre-JSEP		Post-JSEP		Change*	
	Mean	SD	Mean	SD	Mean	SD
Language standard score	46.0	5.4	46.6	5.5	0.5	4.7
Mathematics standard score	46.9	5.5	49.6	6.3	2.4	5.4
Total-GT conversion	92.3	9.7	95.9	9.9	3.1	8.4
Missing-number	(8)	--	(46)	--		

<u>GT Conversion Range</u>	Pre-JSEP		Post-JSEP	
	No.	Pct.	No.	Pct.
50--69	3	1.8	--	--
70--89	67	39.2	32	24.1
90--99	67	39.2	56	42.1
100--109	30	17.5	30	22.6
110 or above	4	2.3	15	11.3
Missing-number	(8)	--	(46)	--

*Calculated for 133 soldiers for whom pretest and posttest were available.

An examination of the standard scores shows that gains were greater in mathematics (2.4 standard score points) than in reading (0.5 points). The standard deviation is the range above and below the mean into which about two-thirds of the cases fall. The figure for mathematics, for example, ($SD=5.4$) means that about two-thirds of the soldiers had changes ranging from a loss of three points to a gain of eight points.

When the standard scores in reading and mathematics were summed and converted to a GT score, the overall average gain was about 3 points. The soldiers entered JSEP with an average GAP score of 92.3. They completed with an average score of 95.9. Matching the pre- and posttest scores of those for whom both were available produced a change of 3.1 points.

The soldiers for whom posttest scores were available had slightly higher pretest scores than did soldiers who were not posttested: an average of 92.8 as opposed to 90.6. The second half of the table looks at the GAP score ranges in the pretest and posttest groups. About one-fifth of the pretest group (20%) had scores of 100 or better on the GAP. This proportion was increased to one-third (34%) among the posttest group. Average gains are not the same as the number of persons meeting a criterion. A small gain may be enough to push sizable numbers over a cut-score, and this appears to be what happened with the GAP results.

Factors Associated with GAP Results

We next looked at factors that seemed possibly related to soldiers' performance on the GAP, using analysis of variance. This is a statistical technique that addresses the question: how much of the variance in an outcome measure (here, the differences among soldiers' GAP posttest scores) can we explain by looking at the values of plausibly related factors?

Background factors. Table 3.4 reports an analysis of variance test of the relationship between GAP posttest and several background factors: the site at which the program was held, and the soldier's rank, years of service, formal education, and GAP pretest score.

Table 3.4. Variance in Soldiers' General Academic Predictor (GAP) Posttest Associated with Background Factors (N=112)

Source	Degrees Freedom	Sum of Squares	Mean Square	F Value	PR>F	R-Square
Model	16	5204.4	325.3	5.21	0.0001	0.467186
Error	95	5935.5	62.5			
Corrected total	111	11139.9				
Site	3	466.2		2.49	0.0652	
Rank	5	322.1		1.03	0.4040	
Years in service	1	96.3		1.54	0.2174	
Years education	6	268.8		0.72	0.6368	
GAP pretest	1	2981.2		47.72	0.0001	

Group	Number	Avg. GAP pretest	Avg. GAP posttest	Avg. change
Rank				
E1	1	97.0	99.0	2.0
E2	6	93.7	91.7	-2.0
E3	26	92.7	95.2	2.5
E4	50	94.5	97.5	3.0
E5	21	90.3	95.0	4.7
E6	8	95.3	96.1	0.8
Years Education				
9	1	95.0	105.0	10.0
11	1	84.0	85.0	1.0
12	99	93.3	95.8	2.5
13	6	91.8	98.3	6.5
14	2	103.0	106.0	3.0
15	2	86.0	92.5	6.5
16	1	109.0	105.0	-4.0

The combination accounted for about 47 percent of the variation in GAP posttest scores ($R^2 = 0.467$) and the probability that this relationship would have occurred by chance was less than 0.0001. However, when the factors were examined individually, only one met the $\leq .05$ probability (5 or fewer chances in 100) established as the significance level for this study. That factor was GAP pretest, and the relationship was positive: the higher a soldier's pretest score on the GAP, the higher the posttest score. The bottom half of Table 3.4 shows the average pre- and posttest scores and gains for soldiers at different ranks and levels of education. This illustrates that there was no consistent relationship between these factors and performance on the GAP.

Program factors. Table 3.5 carries out the same statistical analysis with two programmatic factors: the time spent in JSEP and the number of lessons attempted. This table reports analyses of variance for the GAP posttest language and mathematics standard scores as well as for the GT conversion score.

The number of lessons taken, time in JSEP, and pretest language score explain about 40 percent ($R^2 = 0.404$) of the variance in language posttest scores, at a probability level of less than 0.0001. However, the only statistically significant factor in the model is language pretest score.

For mathematics, the total model explains 42 percent of the variance in posttest scores and each of the factors meets the .05 significance level. Time in JSEP, number of lessons attempted, and mathematics pretest score are associated with posttest performance to a degree that is not very likely due to chance. The relationship between time and posttest score is negative: the less time spent in JSEP, the higher the mathematics posttest score.

The outcomes were the same in analyzing overall GT conversion scores. The combination of factors examined explained 46 percent of the variance at a probability level of less than 0.0001. The relationship was statistically significant for time in JSEP (0.0011) and GAP pretest score (0.0001). The relationship between posttest score and time in JSEP was also negative.

In summary, soldiers showed gains of about 3 points on the GAP following participation in JSEP. The program had a greater effect on mathematics performance than

Table 3.5. Variance in Soldiers' General Academic Predictor (GAP) Posttest-Language Score Associated with Time in and Number of Lessons (N=129)

Source	Degrees Freedom	Sum of Squares	Mean Square	F Value	PR>F	R-Square
<u>Language Score</u>						
Model	3	1591.5	530.5	28.19	0.0001	0.403545
Error	125	2352.4	18.8			
Corrected total	128	3944.0				
Time in JSEP*	1	25.6		1.36	0.2459	
Number lessons*	1	4.3		0.23	0.6324	
GAP language pretest	1	1251.7		66.51	0.0001	
<u>Mathematics Score</u>						
Model	3	2166.9	722.3	30.70	0.0001	0.424257
Error	125	2940.6	23.5			
Corrected total	128	5107.6				
Time in JSEP*	1	311.1		13.22	0.0004	
Number lessons	1	109.7		4.66	0.0327	
GAP math pretest	1	681.8		28.98	0.0001	
<u>GT Conversion Score</u>						
Model	3	5794.5	1931.5	35.26	0.0001	0.458368
Error	125	6847.1	54.8			
Corrected total	128	12641.5				
Time in JSEP*	1	611.2		11.16	0.0011	
Number lessons	1	114.0		2.08	0.1516	
GAP GT pretest	1	2231.8		40.74	0.0001	

*Negative relationship; e.g., the longer the time in JSEP, the lower the posttest score.

on reading. Two factors appeared to influence posttest results. These were pretest scores and the length of time spent in JSEP, with soldiers who spent less time in the program achieving higher posttest scores. This last could have reflected some general ability, such as learning speed. The question of whether greater GAP gains could, or should, have been expected is discussed in the closing chapter on results and conclusions.

Lesson Level Results

The lesson-level information came from the demographics and lesson performance results recorded by JSEP's soldier management system, and from records of paper lesson performance maintained by the JSEP instructors.

Match Between Prescriptions and MOSs

The JSEP prescriptions are intended to cover the most heavily populated MOSs. JSEP assigns a prescription for the soldier's primary MOS; if none exists, for his or her secondary MOS; and if none is available for that MOS, the program prescribes the Common Core lessons. Table 3.6 lists the number of soldiers in each primary and secondary MOS reported among the group, and indicates whether there was a corresponding JSEP prescription. There were prescriptions for the primary MOS of 125 (70%) of the soldiers, and for the secondary MOS of 23 (68%) of those soldiers who reported one. The JSEP participants reflected a wide range of MOSs, with about 70 percent from the Combat Support or Combat Service Support Career Management Fields. About half of those remaining were drawn from the Artillery Career Management Field. Among those without a prescription, the MOSs with the greatest numbers of soldiers were 76Y, Unit Supply Specialist (18 persons) and 31K, Combat Signaller (10 persons).

Learning Strategies Lessons

The Learning Strategy Lessons do not teach specific MOS-related content, but cover general learning skills that are believed to contribute to a soldier's success in completing JSEP. All soldiers are automatically assigned the Time Management lesson when they begin JSEP. The other lessons may be assigned by the instructor or automatically presented to students when their performance on content lesson tests trips a

Table 3.6. Match Between JSEP Prescriptions and Soldiers' Military Occupation Specialties (N=179)

MOS Title	Number and Percent Reporting as:				JSEP Prescription?
	Primary MOS No.	Primary MOS Pct.	Secondary MOS No.	Secondary MOS Pct.	
11b Infantryman	7	3.9	8	4.5	Yes
11c Indirct fire infantry	--	--	1	0.6	Yes
12b Combat engineer	13	7.3	2	1.1	Yes
13b Cannon crewmember	23	12.8	1	0.6	Yes
13e Cannon fire spec	1	0.6			Yes
13f Fire support spec	1	0.6			Yes
13m Multi launch rocket	2	1.1			No
15e PERSHING crewmember	1	0.6			Yes
16d HAWK crewmember	4	2.2			Yes
16p CHAPARREL crewman	--	--	1	0.6	Yes
16r CHAPARREL crewmember			3	1.7	No
16s MANPADS crewmember	1	0.6			No
16t PATRIOT crewmember			1	0.6	No
19d Cavalry scout	1	0.6	1	0.6	Yes
24m VULCAN mech	1	0.6			No
24t PATRIOT operator/mech	1	0.6			No
29n Phone cntrl off repair	1	0.6			No
31c Single chan radio op			2	1.1	No
31k Combat signaller	10	5.6			No
31l Wire system install	1	0.6			Yes
31m Multichannel comm	1	0.6	1	0.6	Yes
31v Tactic commn op/mech	--	--	2	1.1	Yes
45l Artillery repair	1	0.6			No
45t BRADLEY turret mech	1	0.6			No
51b Carpentry/mason spec	1	0.6			No
51m Firefighter	1	0.6			No
52d Power gen equip repair	3	1.7			Yes
54b Chemical oper spec	2	1.1			No
55b Ammunition spec	--	--	1	0.6	Yes
57h Cargo spec	--	--	2	1.1	No
62b Constrct equip repair	2	1.1			Yes
62e Hvy constrct oper	2	1.1			Yes
62h Concrct/asphalt equip	1	0.6			No
62n Constrct equip super	1	0.6			No
63b Light vehicle mech	9	5.0	3	1.7	Yes
63d Sp FA sys mech	2	1.1			No
63e M1 ABRAMS mech	1	0.6			No
63s Hvy vehicle mech	3	1.7			No
63w Water treat spec	3	1.7			Yes
64c Motor transport oper	7	3.9	3	1.7	Yes
67v Obs/scout heli repair	1	0.6			Yes
711 Admin spec	12	6.7	2	1.1	Yes
71m Chapel activs spec	1	0.6			No

Table 3.6. (Cont.) Match Between JSEP Prescriptions and Soldiers' Military Occupation Specialties (N=179)

MOS Title	Number and Percent Reporting as:				JSEP Prescription?
	Primary MOS No.	Primary MOS Pct.	Secondary MOS No.	Secondary MOS Pct.	
72e Telecomm center op	1	0.6			No
75b Personnel admin spec	3	1.7			Yes
75c Personnel mgt spec	3	1.7			No
76c Equip records/parts	4	2.2			Yes
76p Material control/acct	2	1.1			Yes
76v Material store/handle	1	0.6			Yes
76x Subsist supply spec	--	--	1	0.6	Yes
76y Unit supply spec	17	9.5	1	0.6	No
77f Petrol supply spec	1	0.6	1	0.6	No
88n Traffic mgt coord			1	0.6	No
91a Medical spec	2	1.1	1	0.6	No
91b Medical NCO	--	--	1	0.6	Yes
91c Practical nurse	1	0.6			No
91d Operate room spec	1	0.6			No
94b Food service spec	9	5.0			Yes
95b Military police	1	0.6	1	0.6	Yes
95c Correctional spec	1	0.6			No
No MOS reported	--	--	145	81.0	

default. For example, the Problem Solving lesson is presented to a student after she or he has failed a preestablished number of mathematics lessons (those in Series 1 through 19).

The number of soldiers assigned these lessons, and the time to complete them, are shown on Table 3.7. All soldiers were assigned to Time Management, and 82 percent of them to Test-Taking. While over half (52%) were given the Problem Solving lesson, only a few (4%) took Reading Strategies. None of the soldiers was assigned the lesson on Motivational Skills. On the average, it required 77 minutes to complete Time Management; the fastest soldier completed the lesson in a little over one-half hour (32 minutes), while the slowest took about three hours (189 minutes) to finish it. Problem Solving required an average of 99 minutes; Test Taking an average of 71. The ranges between minimum and maximum times are typical of those observed for many lessons.

Table 3.7. Learning Strategies: Number Attempting Lessons and Time to Complete (N=179)

<u>Lesson</u>	Assigned		Time in Minutes		
	No.	Pct.	Avg.	Min.	Max.
LS1. Time Management	179	100.0	77	32	189
LS2. Problem Solving	93	52.0	99	12	322
LS3. Reading Strategies	7	3.9	52	29	81
LS4. Test Taking	146	81.6	71	31	260
LS5. Motivational Skills	0	--	--	--	--

Lesson Test Results

Florida State University modified the JSEP soldier management system for the evaluation so that soldiers were pretested before they began each on-line lesson. Every prerequisite competency had its own brief test; but for any given competency the same items comprised the pretest and the posttests for both the short and long lessons. The possible combinations of testing and instruction were the following.

<u>Short Lesson Only⁵</u>	<u>Short & Long Lesson</u>	<u>Paper Lesson</u>
Pretest	Pretest	
Short Lesson	Short Lesson	Lesson
Posttest	Posttest	Posttest
	Long Lesson	
	Posttest	

It should be noted that changing the soldier management system to include pretests meant that soldiers were allowed only one attempt at the long lesson instead of the two attempts that are part of JSEP's design. As a result, the proportions of soldiers failing long lessons in this study are possibly larger than they would be if soldiers were given a second chance at the lesson.

The system recorded each soldier's status for every on-line lesson he or she attempted. The status recorded for a lesson could be that the soldier passed the pretest, passed the short lesson test, passed the long lesson test, or failed. There were no pretests or enforced passing scores for paper lessons, and the system recorded only if these had been attempted. We added the paper lesson scores reported by the instructors to the lesson files for the evaluation.

Summary lesson data. The summary statistics for the lesson-level performance and time are shown on Table 3.8; subsequent tables included in Appendix C break this information out in more detail. Table 3.8 lists each JSEP lesson, indicating whether it was on-line or paper. The table shows the number of soldiers attempting each lesson,

⁵For brevity, Diagnostic Review Lessons will be referred to as "short" and Skill Development Lessons as "long" lessons.

Table 3.8. Number and Percent of Soldiers Attempting Each Lesson with Summary Performance Statistics (N=179)

Lesson	Attempt Lesson (No.)	Passed Pretest (Pct.)	Passed Short* (Pct.)	Passed Long (Pct.)	Failed** (Pct.)	Minutes to Complete Min	Minutes to Complete Max
<u>Numbering & Counting</u>							
1a. Match name	175	69.7	20.0	8.0	2.3	8	221
1b. Sequence	174	35.1	23.6	24.1	17.2	8	225
1c. Before, between	175	3.4	22.9	26.3	47.4	10	594
1d. Greater/lesser	174	47.7	17.8	19.5	14.9	3	526
1e. Ordinal position	174	77.6	18.4	2.9	1.1	5	163
1f. Place value	175	49.1	46.9	1.7	2.3	4	92
1g. Round whole/decimal	174	27.0	42.0	19.5	11.5	5	293
1h. Count by 1,5,10, etc.	171	29.2	45.6	--	25.1	6	148
1i. Match scale intervals	172	29.1	25.6	--	45.3	7	391
<u>Linear, Weight & Volume Measures</u>							
2a. Linear scale mark	167	84.4	9.0	6.0	0.6	4	85
2b. US & metric measures	169	48.5	45.6	5.9	0.0	3	442
2c. Lengths	167	85.6	13.2	1.2	0.0	5	133
2d. Weight, pressure, torque	53	88.7	9.4	--	1.9	3	41
2e. Volume	169	60.4	31.4	--	8.3	6	165
2f. Non-numeric calibrated	167	61.1	35.9	--	3.0	3	91
2g. Estimate size, distance	167	21.0	42.5	10.2	26.3	5	239
<u>Degree Measures</u>							
3a. Degrees, mils, angles, temp	164	64.0	30.5	4.9	0.6	6	202
3b. Est angle \leq 180 deg	164	62.8	25.0	6.7	5.5	4	205
3c. Interp azimuths, 0-6400 mils	162	5.6	35.8	35.8	22.8	5	420
3d. Interp azimuths, 0-360 deg	162	53.1	34.6	7.4	4.9	3	176
<u>Time-Telling Measures</u>							
4a. Digital, analog, 24 hr	169	11.2	60.9	21.9	5.9	4	318
4b. Clockface direction	168	50.0	45.8	4.2	0.0	3	66
4c. Est secs, mins	168	81.0	14.3	1.8	3.0	4	107
4d. Gregorian & Julian	170	1.2	18.2	48.2	32.4	19	442
4e. Convert hours, 10ths	45	0.0	71.1	--	28.9	18	128
4f. Convert to Zulu	3	0.0	0.0	33.3	66.7	140	228

*Paper lessons indicated by asterisk; score shown as 100.0 in "Passed Short" column.

**Percent failing test after final lesson for prerequisite competency; dashes in "Passed Long" column indicate no long lesson for competency.

Table 3.8. (Cont.) Number and Percent of Soldiers Attempting Each Lesson with Summary Performance Statistics (N=179)

Lesson	Attempt Lesson (No.)	Passed Pretest (Pct.)	Passed Short* (Pct.)	Passed Long (Pct.)	Failed** (Pct.)	Minutes to Complete Min	Minutes to Complete Max
<u>Gage Measures</u>							
5a. Read gage	162	17.3	69.8	11.1	1.9	7	233
5b. Read read-out	162	70.4	27.8	1.2	0.6	3	70
5c. Read gage, color	162	81.5	17.9	0.6	0.0	4	32
5d. Read scales (+/-)	162	97.5	1.9	0.6	0.0	3	51
5e. Read multiscale	162	63.6	18.5	16.0	1.9	5	205
5f. Match gage to spec	161	75.2	16.8	4.3	3.7	4	108
5g. Read unnumbered/unmarked	161	96.3	2.5	1.2	0.0	3	32
5h. Read fluctuating gage	161	52.8	35.4	6.2	5.6	9	188
5i. Match specs/align	161	90.7	9.3	0.0	0.0	5	43
<u>Spatial</u>							
6a. Ident direct tools move	155	98.7	1.3	0.0	0.0	5	61
6b. Manip to align, etc.	154	33.8	40.3	14.9	11.0	10	216
6c. 2-dimension to spatial	154	95.5	3.2	1.3	0.0	6	242
6d. Symbols to systems	154	47.4	31.8	--	20.8	6	64
<u>Lines</u>							
7a. Ident points, etc.	157	43.9	52.9	3.2	0.0	3	46
7b. Ident vert, horiz, diag	157	58.0	34.4	5.7	1.9	3	197
7c. Ident intersect, diverg	157	59.2	36.9	3.2	0.6	2	90
7d. Superimpose lines	6	0.0	100.0	--	0.0	12	32
7e. Draw lines*	145	--	100.0	--	--	--	--
<u>Planes</u>							
8a. Match plane shapes	156	80.1	19.9	0.0	0.0	3	30
8b. Ident geometric	47	100.0	0.0	--	0.0	4	20
8c. Apply shape terms	156	58.3	23.1	9.0	9.6	4	106
8d. Match patterns	156	81.4	10.9	3.8	3.8	3	102
8e. Figure orient	157	90.4	7.6	--	1.9	3	30
<u>Angles & Triangles</u>							
9a. Ident angles	162	16.0	59.3	17.3	7.4	8	171
9b. Ident types angles	18	5.6	77.8	--	16.7	12	85
9c. Ident types triangles	9	44.4	55.6	0.0	0.0	4	36
9d. Ident altitudes, bisect	162	24.7	52.5	21.0	1.9	7	303
9e. Name angles	17	41.2	58.8	--	0.0	7	76

*Paper lessons indicated by asterisk; score shown as 100.0 in "Passed Short" column.

**Percent failing test after final lesson for prerequisite competency; dashes in "Passed Long" column indicate no long lesson for competency.

Table 3.8. (Cont.) Number and Percent of Soldiers Attempting Each Lesson with Summary Performance Statistics (N=179)

Lesson		Attempt Lesson (No.)	Passed Pretest (Pct.)	Passed Short* (Pct.)	Passed Long (Pct.)	Passed Failed** (Pct.)	Minutes to Complete
							Min Max
<u>Solids</u>							
10a.	Match names/figures	168	17.3	62.5	18.5	1.8	3 81
<u>Terminology</u>							
11a.	Ident shape, position*	153	--	100.0	--	--	-- --
11b.	Ident spatial terms*	153	--	100.0	--	--	-- --
<u>Addition & Subtraction</u>							
12a.	Whole, no carry	167	99.4	0.6	0.0	0.0	5 53
12b.	Whole, carry	167	89.8	9.0	0.6	0.6	5 260
12c.	Decimals, carry	167	81.4	13.8	4.2	0.6	4 271
12d.	Pos & neg numbers	164	13.4	41.5	32.9	12.2	3 790
12e.	24-hour time	164	51.2	23.2	13.4	12.2	5 608
12f.	Increments measuring	162	73.5	19.1	6.2	1.2	9 147
12g.	Linear, dry, liquid, deg	58	15.5	44.8	22.4	17.2	10 411
12h.	Estimate sum, diff	162	1.2	17.9	22.2	58.6	9 220
<u>Multiplication & Division</u>							
13a.	Whole numbers	153	83.7	13.1	3.3	0.0	12 325
13b.	Whole & decimal	154	44.8	31.2	16.2	7.8	5 277
13c.	Deci, divisor, dividend	151	31.1	20.5	9.3	39.1	10 242
13d.	Neg & pos numbers	24	29.2	70.8	0.0	0.0	5 44
13e.	Est product, quotient	20	75.0	20.0	0.0	5.0	6 87
<u>Fractions/Decimals</u>							
14a.	Est frac length, area, vol	149	67.1	18.1	7.4	7.4	4 168
14b.	Reduce	149	76.5	18.1	2.7	2.7	4 409
14c.	Convert decs/fracs	20	60.0	20.0	5.0	15.0	8 118
14d.	Convert decimals/%'s	148	40.5	53.4	4.1	2.0	5 228
14e.	Add, subtract fracs	56	51.8	39.3	7.1	1.8	5 176
14f.	Multiply, divide fracs	148	27.7	49.3	19.6	3.4	10 311
14g.	Estimate fraction	35	22.9	20.0	25.7	31.4	5 200

*Paper lessons indicated by asterisk; score shown as 100.0 in "Passed Short" column.

**Percent failing test after final lesson for prerequisite competency; dashes in "Passed Long" column indicate no long lesson for competency.

Table 3.8. (Cont.) Number and Percent of Soldiers Attempting Each Lesson with Summary Performance Statistics (N=179)

Lesson	Attempt Lesson (No.)	Passed Pretest (Pct.)	Passed Short* (Pct.)	Passed Long (Pct.)	Passed Failed** (Pct.)	Minutes to Complete
						Min Max
<u>Geometry</u>						
15a. Draw plane fig	146	84.2	15.8	--	0.0	3 29
15b. Match figures/names	146	83.6	14.4	1.4	0.7	3 58
15c. Label objects, figures	146	86.3	13.7	--	0.0	3 39
15d. Use protractor	143	82.5	4.2	7.7	5.6	0 163
15f. Area, perimeter rectang	37	2.7	59.5	37.8	0.0	4 54
15g. Radius, area, circum cir	28	10.7	82.1	3.6	3.6	9 171
15h. Measure rectang solids	35	0.0	51.4	31.4	17.1	15 128
15i. Geometric prob formulas	16	50.0	43.8	6.3	0.0	10 222
15j. Oscilloscope readouts	11	0.0	9.1	36.4	54.5	58 264
<u>Combination of Processes</u>						
16a. Locate center of object	1	100.0	0.0	--	0.0	3 3
16b. Compute averages	144	64.6	26.4	3.5	5.6	7 121
16c. All proc, whole/mixed	23	17.4	26.1	26.1	30.4	8 515
16d. All proc, units meas	21	4.8	19.0	33.3	42.9	11 121
16e. Info charts, graphs, etc.	11	54.5	36.4	9.1	0.0	6 97
16f. Conversion probs	41	29.3	53.7	7.3	9.8	5 254
16g. Ratio, proportion probs	143	31.5	49.0	7.0	12.6	0 231
16h. All proc, word probs	24	50.0	33.3	12.5	4.2	5 76
<u>Graphing in the Coordinate Plane</u>						
17a. Grid coords map	151	47.0	40.4	10.6	2.0	6 310
17b. 6-digit coords	151	78.1	17.2	--	4.6	4 61
17c. Plot point	1	100.0	0.0	0.0	0.0	6 6
17d. 8-digit coords	1	--	100.0	--	--	25 25
<u>Algebra</u>						
18a. Equations, 1 unknown	5	40.0	0.0	0.0	60.0	20 196
18b. Equivalent equations	2	0.0	50.0	0.0	50.0	25 110
18c. Calculate power, sq root	12	41.7	58.3	0.0	0.0	9 47
<u>Trigonometry</u>						
19a. Use trig tables	0	--	--	--	--	-- --
19b. Log tables*	2	--	100.0	--	--	-- --
19c. Trig solve geometry	0	--	--	--	--	-- --
19d. Trig func tbls (degrees)	0	--	--	--	--	-- --

*Paper lessons indicated by asterisk; score shown as 100.0 in "Passed Short" column.

**Percent failing test after final lesson for prerequisite competency; dashes in "Passed Long" column indicate no long lesson for competency.

Table 3.8. (Cont.) Number and Percent of Soldiers Attempting Each Lesson with Summary Performance Statistics (N=179)

Lesson	Attempt Lesson (No.)	Passed Pretest (Pct.)	Passed Short* (Pct.)	Passed Long (Pct.)	Failed** (Pct.)	Minutes to Complete
						Min
						Max
Procedural Directions						
25a. Follow directions*	131	--	100.0	--	--	--
25b. Text, complete task*	131	--	100.0	--	--	--
25c. Follow details, seq*	130	--	100.0	--	--	--
25d. Determine message*	129	--	100.0	--	--	--
25e. Select decision*	49	--	100.0	--	--	--
25f. Synthesize info*	16	--	100.0	--	--	--
Vocabulary						
26a. Common words	160	76.3	10.0	13.8	0.0	7 926
26b. Aircraft, tank words	6	83.3	16.7	0.0	0.0	6 51
26c. Mean from context	157	93.0	2.5	1.9	2.5	3 302
26d. Contract, abbrev, acronym	155	27.1	52.9	13.5	6.5	5 210
26e. Figurative, idiomatic	155	80.6	11.0	2.6	5.8	4 214
26f. Communic, navig words	156	23.7	70.5	--	5.8	5 325
26g. Rifle, survival words	156	32.1	60.3	--	7.7	4 77
Reference Skills						
27a. Locate documents	131	99.2	0.8	0.0	0.0	3 22
27b. Locate & file	131	96.2	3.1	0.8	0.0	4 38
27c. Tbl cont, index, gloss	130	81.5	13.8	2.3	2.3	3 144
27d. Locate title, page, etc.	130	95.4	4.6	0.0	0.0	8 49
27e. Skim, scan for info	133	18.8	42.1	17.3	21.8	4 176
27f. Use cross references	129	69.0	19.4	10.1	1.6	5 172
Tables/Charts						
28a. Fact from 2-col table	145	97.2	2.8	0.0	0.0	0 27
28b. Fact from tbl intersect	133	99.2	0.8	--	0.0	0 26
28c. Complex tbl, cross ref	69	47.8	21.7	17.4	13.0	0 211
28d. Tbls locate malfunction	143	61.5	22.4	10.5	5.6	0 225
Illustrations						
29a. Details from illus	137	83.9	12.4	3.6	0.0	6 92
29b. Details from key, legend	137	98.5	1.5	0.0	0.0	5 28
29c. Use cross-sec view	137	99.3	0.7	0.0	0.0	4 29
29d. 3-D projection	137	75.9	18.2	--	5.8	3 39
29e. Illus to follow direct	139	99.3	0.7	0.0	0.0	5 23

*Paper lessons indicated by asterisk; score shown as 100.0 in "Passed Short" column.

**Percent failing test after final lesson for prerequisite competency; dashes in "Passed Long" column indicate no long lesson for competency.

Table 3.8. (Cont.) Number and Percent of Soldiers Attempting Each Lesson with Summary Performance Statistics (N=179)

Lesson	Attempt Lesson (No.)	Passed Pretest (Pct.)	Passed Short* (Pct.)	Passed Long (Pct.)	Failed** (Pct.)	Minutes to Complete
						Min Max
<u>Flow Charts</u>						
30a. Meanings flow cht symbol	140	3.6	95.7	--	0.7	2 80
30b. Flow cht, proced decis	8	50.0	37.5	--	12.5	6 38
30c. Ident organiz members	4	100.0	0.0	--	0.0	5 7
<u>Schematics</u>						
31a. Locate subsys block	26	0.0	61.5	26.9	11.5	15 137
31b. Components, signal path	21	0.0	85.7	14.3	0.0	35 157
31c. Circuit connects schema	18	33.3	44.4	--	22.2	4 37
31d. Faulty compon/trbleshoot	4	100.0	0.0	0.0	0.0	6 9
31e. Symbol: comp, signal path	6	83.3	16.7	0.0	0.0	4 23
<u>Forms</u>						
32a. Locate block for info	133	99.2	0.8	0.0	0.0	3 32
32b. Transfer data	131	99.2	0.8	0.0	0.0	5 26
32c. Enter info on form	129	77.5	13.2	2.3	7.0	8 225
32e. Use form to find info	129	99.2	0.8	0.0	0.0	4 28
<u>Note-Taking</u>						
33a. Record info*	123	--	100.0	--	--	--
33b. Accuracy recording*	123	--	100.0	--	--	--
33c. Record info sentence*	5	--	100.0	--	--	--
33d. Record info >1 sentence*	1	--	100.0	--	--	--
<u>Outlining (Topic or Sentence)</u>						
34a. Ident main idea	5	0.0	20.0	--	80.0	11 45
34b. Titles for outline	3	100.0	0.0	--	0.0	6 8
34c. Select details	5	100.0	0.0	--	0.0	9 16
34d. Label topics	131	7.6	46.6	--	45.8	26 336
34e. Training outline*	117	--	100.0	--	--	--

*Paper lessons indicated by asterisk; score shown as 100.0 in "Passed Short" column.

**Percent failing test after final lesson for prerequisite competency; dashes in "Passed Long" column indicate no long lesson for competency.

Table 3.8. (Cont.) Number and Percent of Soldiers Attempting Each Lesson with Summary Performance Statistics (N=179)

Lesson	Attempt Lesson (No.)	Passed Pretest (Pct.)	Passed Short* (Pct.)	Passed Long (Pct.)	Passed Failed** (Pct.)	Minutes to Complete (Min)	Minutes to Complete (Max)
<u>Report Writing</u>							
35a. Ident objectives*	22	--	100.0	--	--	--	--
35b. Who, what, when, etc.*	116	--	100.0	--	--	--	--
35c. Relevant details*	23	--	100.0	--	--	--	--
35d. Sequence events*	115	--	100.0	--	--	--	--
35e. Impressions of event*	115	--	100.0	--	--	--	--
35f. Write report*	114	--	100.0	--	--	--	--
35g. Summarize events*	0	--	--	--	--	--	--
35h. Major points*	114	--	100.0	--	--	--	--
35i. Justify action*	23	--	100.0	--	--	--	--
35j. Report by format*	5	--	100.0	--	--	--	--
<u>Editing</u>							
36a. Spell common words	47	59.6	34.0	4.3	2.1	8	207
36b. Spell task words	44	81.8	9.1	9.1	0.0	8	245
36c. Capitalization	35	5.7	34.3	17.1	42.9	8	263
36d. Correct misspelling	28	78.6	14.3	7.1	0.0	9	127
36e. Punctuation	35	2.9	25.7	17.1	54.3	50	453
36f. Grammar rules	35	57.1	40.0	2.9	0.0	8	160
36g. Rewrite paragraph	3	33.3	66.7	--	0.0	8	49
36h. Appraise & adjust	28	64.3	25.0	--	10.7	6	93
<u>Precautions</u>							
40a. Knowledge prevent injury	133	100.0	0.0	--	0.0	4	25
40b. Safety/security probs	133	82.7	15.8	--	1.5	3	72
40c. Emergency action	135	44.4	45.2	--	10.4	4	68
<u>Recognition</u>							
41a. Label objects	133	98.5	1.5	0.0	0.0	3	18
41b. Hand & arm signals	130	12.3	76.2	10.8	0.8	4	235
41c. Equip damage, defects	129	76.0	22.5	1.6	0.0	6	186
41d. Move, aline, connect	129	90.7	7.8	--	1.6	2	17
41e. Objs size, shape, etc.	131	98.5	1.5	0.0	0.0	3	24
41g. Choose action	128	72.7	14.1	--	13.3	3	36
41h. Use symbols & codes	128	91.4	6.3	1.6	0.8	6	110

*Paper lessons indicated by asterisk; score shown as 100.0 in "Passed Short" column.

**Percent failing test after final lesson for prerequisite competency; dashes in "Passed Long" column indicate no long lesson for competency.

which ranges from 175 for lessons such as "1a. Match numeral with name" to one (example, "17c. Plot point, distance and direction given"). It also shows, based on the number attempting a lesson, the percent of those who:

- passed the pretest;
- failed the pretest but passed the short lesson test;
- failed the short lesson test but passed the long lesson test;
- failed the lesson (failed the long lesson test or failed the short lesson test and no long lesson was available).

Percentages allow easily understood comparisons across lessons. They should be interpreted cautiously, however, for those lessons that were attempted by only a small number of persons.

The last information in Table 3.8 is the minimum and maximum amounts of time in minutes to complete the lesson. These figures illustrate a problem in deciding how long it takes a soldier to complete JSEP. For Lesson 1a, for example, the quickest soldier took 8 minutes to complete the lesson (presumably passing the pretest) and the slowest took 221 minutes. In several lessons the maximum value was difficult to accept; for example, almost 10 hours for Lesson 1c, or 13 hours for Lesson 12d. However, JSEP's management system signs students off from a lesson if they go beyond a certain length of time without making a response, so the records should not have included any great periods of time when a student was away from the terminal. Some of the time could have been used by soldiers to write on-line notes about the lessons. There is no way to separate this time from that used in testing or instruction. At the other extreme, students were reported to have completed several lessons (e.g., 15d, 28a) in 0 minutes. Here it seems possible that an instructor might have intervened to pass a student manually. Since there is no ready mechanical explanation of these extreme times we simply report what was recorded, and assume that the figures do accurately illustrate that some students moved through JSEP at a very deliberate speed. And, since JSEP is a self-paced program it did not seem appropriate to exclude data on the grounds that a soldier was unusually slow or fast. The best compromise we could reach was that of showing the median time values for soldiers who pretested out of a lesson, passed after the short lesson, and so forth. These figures appear in Appendix C, Table C.2.

Table 3.8 reinforces the instructors' comments that the JSEP diagnostic test is needed to save soldiers the time of taking lessons on content they already know. Of the total 186 lessons in JSEP, soldiers attempted 153 on-line lessons during the evaluation. For 91 of these lessons (59%) half or more of the soldiers attempting them passed the pretest and were thus exempted from the lesson. At the other extreme, 18 of the lessons (12%) were failed after instruction by one-fourth or more of the soldiers attempting them. It was not always clear whether test performance reflected difficult content or difficult test items. For example, in lesson "14f. Multiply and divide fractions," about 28 percent passed the pretest, 49 percent passed the short lesson test, and 3 percent failed the lesson. These seem plausible results for a mathematics skill that is rarely used after being taught in the elementary grades, but which can often be recalled with a little practice. However, only 3 percent of the soldiers passed the pretest for lesson "1c. Identify number before, between" others, and 47 percent failed the lesson. This seems a likely instance of test items that are worded or scored in such a way that they are more difficult than the content they measure.

Specific Lesson Level Findings

Detailed lesson performance data were considered of limited interest to the general reader, and therefore are presented in Appendix C, with accompanying text. Table C.1 breaks out the number of soldiers failing the pretest for each lesson and, among those, the percent passing the short lesson test, passing the long lesson test, or failing the lesson. The same appendix includes Table C.2, which reports the median time required to complete each lesson by soldiers passing the pretest, taking only the short lesson, and taking both the short and long lessons. This analysis illustrates the variation in the amount of time different soldiers required to complete the same lesson, and demonstrates that considerable learner time was saved through the pretest option that could exempt a soldier from instruction in a competency already mastered.

Common Core Performance

Every soldier may have a different MOS-based or customized prescription on JSEP, and may work through this list of lessons at an individual pace. The one commonality across all participants is the combination of lessons comprising the Common Core Prescription, which is assigned to all soldiers. These 122 lessons (98 of which are on-

line) are embedded in every MOS prescription and are the default prescription for any student whose primary or secondary MOS does not have a JSEP prescription.

Table 3.9 displays an analysis of performance on the 98 on-line Common Core lessons by the evaluation soldiers. The information is broken out by lesson series. The number of soldiers attempting each lesson was not necessarily the same; to create the table we added the percent of soldiers in each status category (e.g., passing the pretest) for the Common Core lessons of the series and divided the sum by the number of Common Core lessons. The median time to complete was calculated in the same manner. The results give a very simplified picture of the "average" performance of a hypothetical Common Core lessons participant.

As might be expected from the title, the Common Core lessons appear relatively easy. Table 3.9 shows that across the 63 quantitative lessons, soldiers passed an average of 57 percent of the lessons on the pretest and an additional 27 percent on the short lesson test. In 8 percent of the lessons, on an average, the soldiers were unsuccessful. Results were similar for the 35 verbal lessons in the Common Core. Here, 76 percent of the lessons were passed on pretest and 19 percent on the short lesson test. On the average, only 3 percent of these lessons were failed.

When the averages are computed across all lessons, soldiers passed the pretest and were exempted from taking 64 percent of the lessons. They passed an additional 24 percent with the short lesson, and on the average failed 6 percent of the lessons. The median time to complete the Common Core prescription was 42 hours and 57 minutes.

JSEP Performance and Entry Achievement

We noted at the beginning of this chapter that the soldiers participating in the evaluation had relatively high reading and arithmetic skills as reported on the TABE. In fact, the average participant entered the program with a reading score almost equivalent to the end-of-program objective for BSEP II. This limited the extent to which the findings of the evaluation can be generalized to the larger population of BSEP-eligible soldiers. Table 3.10 reports an analysis directed at this limitation, the examination of soldiers' performance on JSEP in light of their entering TABE and GT scores.

Table 3.9. Soldiers' Performance on Common Core Lessons,
by Series (N=179)

Series*	Pretest	Percent Passing:		
		Short Lesson	Long Lesson	Not Pass
Numbering and Counting (9)	40.9	29.2	11.3	18.6
Linear, Weight, Volume Measures (6)	60.2	29.6	3.8	6.4
Time-Telling Measures (4)	35.9	34.8	19.0	10.3
Gage Measures (9)	71.7	22.2	4.6	1.5
Spatial (4)	68.9	19.2	4.1	8.0
Lines (3)	53.7	41.1	4.0	0.8
Planes (4)	77.6	15.4	3.2	3.8
Angles & Triangles (2)	20.4	55.9	19.2	4.7
Solids (1)	17.3	62.5	18.5	1.8
Addition & Subtraction (7)	58.6	17.9	11.4	12.2
Multiplication & Division (3)	53.3	21.6	9.6	15.6
Fractions & Decimals (4)	53.0	34.7	8.5	3.9
Geometry (4)	84.2	12.0	2.3	1.6
Combination of Processes (2)	64.6	26.4	3.5	5.6
Graphing in the Coordinate Plane (1)	47.0	40.4	10.6	2.0
Subtotal: Quantitative Lessons (63)	57.4	26.8	8.1	7.6
 Vocabulary (6)	55.5	34.5	5.3	4.7
Reference Skills (6)	78.2	12.9	4.1	4.8
Tables & Charts (3)	86.0	8.7	3.5	1.9
Illustrations (5)	91.4	6.7	0.7	1.2
Flow Charts (1)	3.6	95.7	0.0	0.7
Forms (4)	93.8	3.9	0.6	1.8
Precautions (3)	75.7	20.3	0.0	4.0
Recognition (7)	77.2	18.6	2.0	2.4
 Subtotal: Verbal Lessons (35)	76.1	18.5	2.5	3.0
 Total: All Lessons (98)	64.1	23.8	6.1	6.0
 Median Time to Complete Common Core Lessons: 42 hours 57 minutes				

*Average for Series; number on-line common core lessons shown in parentheses for each Series. Not all soldiers attempted all lessons.

Table 3.10. Percent of Lessons Not Needed or Failed Among
Soldiers at Various Entry Achievement Levels (N=179)

Soldiers Scoring	Average Percent Lessons: Not Needed			Failed		
	Quant	Verbal	All	Quant	Verbal	All
TABE Grade Ranges						
Reading ≤ 8.9 (35)*	44.5	62.1	49.4	11.6	7.6	10.3
Reading 9.0--10.9 (70)	52.6	69.8	57.4	8.2	4.4	7.6
Reading ≥ 11.0 (30)	62.5	80.1	68.0	5.3	2.4	4.5
Math ≤ 6.9 (13)	39.9	59.9	47.4	20.2	12.1	16.8
Math 7.0--8.9 (70)	49.5	69.8	53.7	9.4	4.5	8.6
Math ≥ 9.0 (52)	60.2	73.4	65.5	4.1	3.2	3.9
BSEP TABE Goal						
Reading < 10.1 (111)	47.9	68.5	53.6	10.4	5.8	9.2
Reading ≥ 10.1 (68)	58.1	74.7	63.2	6.3	2.7	5.6
Math < 10.1 (160)	50.3	70.6	55.8	9.6	4.8	8.4
Math ≥ 10.1 (19)	64.2	74.0	69.9	2.4	3.4	2.9
GT Score Ranges						
GT ≤ 89 (57)	47.9	65.6	52.6	10.2	5.1	9.1
GT 90--99 (82)	52.5	72.3	58.3	8.5	6.7	7.8
GT ≥ 100 (32)	57.9	76.8	62.9	6.9	2.2	6.0

*Number of observations shown in parentheses.

Across subject areas and achievement measures, the higher the soldiers' scores, the greater the proportion of JSEP lessons they did not need (i.e., passed the pretest for) and the smaller the proportion of lessons they failed after instruction. For example, soldiers scoring below the 9.0 grade level in reading on the TABE pretested out of half (49%) of their JSEP lessons; those scoring at the 11.0 grade level or above in reading passed the pretest for more than two-thirds (68%) of their lessons. Higher scores in reading on the TABE were associated with greater success in both quantitative and verbal lessons on JSEP; the same was true for TABE mathematics achievement.

When the data were sorted to separate soldiers who had met the 10.1 grade level criteria in reading or mathematics that are the objectives for BSEP II from those who had not, the findings were similar. Among soldiers scoring at the 10.1 grade level or better on the TABE in either subject, about two-thirds of the JSEP lessons were passed on pretest and no further instruction was needed. And, these soldiers failed relatively few lessons.

Entry GT score was also associated with JSEP lesson performance. The soldiers who began JSEP with a GT score of 100 or more tested out of three-fifths (58%) of the quantitative and three-fourths (77%) of the verbal lessons. They failed about 7 percent of the quantitative and 2 percent of the verbal lessons.

Performance Standards

There are no objective standards for how many lessons a soldier should pass on pretest (and thus not need) or of how many a soldier can fail acceptably. With no operational definition of "when JSEP works," it is impossible to specify which soldiers it works for. Soldiers meeting BSEP graduation goals on the TABE (10.1 grade level), or the general reenlistment criterion of 100 on the GT, passed an average of two-thirds of the JSEP lessons on the pretest. Whether JSEP is suitable or too easy for this group is a matter of instructional judgment. On the other hand, soldiers in the lowest ability groupings reported here were typically unsuccessful in about 10 percent of the JSEP lessons they attempted. Those scoring below the 7.0 grade level in mathematics failed almost twice as many quantitative lessons as any other group. Deciding whether a soldier's achievement level is too low for him or her to profit from JSEP instruction is also a matter of judgment. Finally, we must point out again that the entry achievement

level of these soldiers was higher than is typical for BSEP classes. The sample may not have included soldiers who had reading and math skills poor enough to prevent them from learning from the program; how frequently such soldiers will be referred to JSEP is an unanswered question.

Completion Rates

JSEP is designed as an open-entry, open-exit program, although during the evaluation period soldiers were typically released from their regular duties for a prespecified number of weeks. Table 3.11 reports information from the logs maintained by the JSEP instructors concerning completion rates, and reflects all evaluation sites. The table suggests that most soldiers do finish the program. At the end of the evaluation period, 63 percent of the participants had completed JSEP, and another 15 percent were either still enrolled or had left temporarily and were expected to return. In only a few cases (4%) had a soldier dropped voluntarily or been dismissed from the program for reasons such as excessive absenteeism. Completion status data were missing for 18 percent of the group. However, the findings here agree with those from interviews with participants and instructors, which are reported in Chapter 4. Soldiers, with few exceptions, like JSEP and persist in it. The fact that some soldiers were expected to return after a short break in their participation suggests that the program does have the scheduling flexibility it was designed to offer.

Table 3.11. Reasons for Leaving JSEP--
All Soldiers (N=207)

Reason	Number	Percent
Completed JSEP	130	62.8
Not completed (still enrolled, temporary break in enrollment)	31	15.0
Dropped or removed from JSEP	8	3.9
Missing data	38	18.4

Informal Follow-Up Data

The evaluation was limited to 90 days and did not include any formal measurement of performance beyond the GAP posttest administered immediately upon finishing JSEP. However, the instructors collected some follow-up information on their students, and forwarded this to us. While these data were not collected as part of the evaluation, and we cannot claim credit or responsibility for them, they do give some idea of JSEP's effects in a realistic setting. Not every evaluation site collected these data.

Some 62 soldiers were posttested on the TABE as soon as they finished JSEP, and the results are shown in Table 3.12. When the results are compared with the TABE scores acquired at some time prior to JSEP, the group showed an average gain of 0.6 grade levels, from 10.2 to 10.8, in reading. Before JSEP, 25 percent were reading at a grade 11.0 level or higher; after JSEP, 44 percent performed at this standard. In mathematics the increase was 1.6 grade levels on an average, from 8.9 to 10.5. Some 10 percent scored at the 11th grade level or higher before JSEP, and the figure increased to 42 percent after JSEP. The instructors from the two sites providing TABE data reported

Table 3.12. Performance on Tests of Adult Basic Education (TABE) by Soldiers at Two JSEP Sites (N=62)

Grade Level	Total Reading:				Total Math:			
	Pretest No.	Pretest Pct.	Posttest No.	Posttest Pct.	Pretest No.	Pretest Pct.	Posttest No.	Posttest Pct.
Grade 5--5.9	--	--	--	--	--	--	1	1.6
Grade 6--6.9	--	--	1	1.6	5	8.1	1	1.6
Grade 7--7.9	3	4.8	--	--	13	21.0	4	6.5
Grade 8--8.2	10	16.1	3	4.8	18	29.0	3	4.8
Grade 9--9.9	15	24.2	11	17.7	10	16.1	16	25.8
Grade 10--10.9	18	29.0	20	32.3	10	16.1	11	17.7
Grade 11--11.9	5	8.1	15	24.2	4	6.5	10	16.1
Grade 12--12.9	11	17.7	12	19.4	2	3.2	16	25.8
Average Score	10.2		10.8		8.9		10.5	
Average Gain			0.6				1.6	

that there was no additional instruction between completion of JSEP and administration of the TABE. We do not know what formal instruction or other learning opportunities may have occurred between the initial TABE and the time at which the soldiers began JSEP. Parenthetically, the average pre-JSEP TABE scores for this group were about 0.2 grade levels higher than those for the JSEP soldiers as a whole.

GT performance for 69 soldiers at five of the evaluation sites is shown in Table 3.13. Among these JSEP participants, an average pre-JSEP GT score of 94.8 increased to an average post-JSEP score of 108.5; an increase of 13.7 points. Perhaps more importantly, 84 percent of the post-JSEP group achieved a score of 100 or better, compared to 19 percent of the group before JSEP.

Table 3.13. Performance on General Technical Composite (GT)
by Soldiers at Five JSEP Sites (N=69)

<u>Score Range</u>	Pretest		Posttest*	
	No.	Pct.	No.	Pct.
110 or above	--		37	53.6
100 - 109	13	18.8	21	30.4
90 - 99	39	56.5	10	14.5
80 - 89	15	21.7	1	1.5
Less than 80	2	2.9	--	
Average Score	94.8		108.5	
Average Gain			13.7	

*Instructors reported that "all but a few" soldiers received BSEP or other math or language arts instruction between JSEP and posttest, but did not identify soldiers.

Two caveats need to be made in regard to these findings. The first is that the instructors reported that all but a few soldiers had received additional GT preparation between the time they completed JSEP and the time they took the GT (they did not identify which soldiers had received supplementary work). This preparation varied by site, but included drill in such things as GT mathematics, vocabulary, and taking timed tests. The second warning is that selection may have taken place. It seems plausible that less prepared soldiers might have been discouraged from attempting the GT. We have no way of knowing if this occurred. An earlier report (Hahn et al., 1986) found average GT gains of about 16 points following BSEP II and an average gain of 10 points with an early version of McFann-Gray. This suggests that if JSEP is coupled with supplementary instruction it is about as effective as BSEP in improving GT, but that BSEP is the program of choice for GT development.

Summary

The preceding pages have presented a great deal of information addressing a number of related, but still different, areas. This section summarizes the findings briefly in order to draw a coherent picture of what they may mean when taken as a whole. It should be repeated that, because of limitations in sample size and the data that could be collected, the analysis was largely restricted to the performance of soldiers in on-line lessons at four PLATO sites.

Completing a prescription of JSEP lessons is associated with small gains (about 3 points) on a test designed to parallel the GT composite. Among the approximately one-third of the soldiers who received some additional GT preparation and then went on to take that test, GT gains were about as great as those reported for BSEP in earlier evaluations. In analyzing the GAP Test results, a student's entry score was the strongest predictor of exit score. A soldier's rank, years of experience in the Army, and level of civilian education had little relation to final score. Number of lessons and time in JSEP did, at least in mathematics: the faster a soldier moved through JSEP, the higher his or her final test performance was.

At the level of individual lessons, soldiers pretested out of about 60 percent of the lessons assigned to them. Among the lessons for which soldiers failed the pretest, about

20 percent were failed by one-fourth or more of the soldiers after instruction. When we looked at the 98 on-line Common Core lessons, which are embedded in every prescription, we concluded (very roughly) that the lessons were needed by and effective for about one-third of the soldiers (excluding the 64 percent who passed the pretests and the 6 percent who failed the lessons) for whom they were prescribed.

The amount of time soldiers needed to complete a prescription, or even a lesson, varied so much that it made little sense to talk about averages. For the 98 on-line lessons of the Common Core (part of every MOS prescription) the median time for completion was about 43 hours. The Common Core is also the prescription for soldiers when there is no JSEP prescription matching their primary or secondary MOS. There was a JSEP prescription for the primary MOS of about 70 percent of the soldiers; the proportion was the same for the soldiers' secondary MOSs.

Finally, we must note again that the entry achievement levels of the soldiers in this evaluation were high, particularly in reading. The cross tabulation of lesson performance by entry TABE and GT scores demonstrates that soldiers with higher achievement levels pretest out of more, and fail fewer, JSEP lessons. We cannot say how "typical BSEP" soldiers would perform in JSEP. Indications are that they would find it more salient, but also more difficult, than the soldiers in this sample did.

The next chapter describes JSEP as it was understood through interviews with, and observations of, the soldiers and educational staff persons participating in the program. This information suggests possible explanations for the performance data just reported. That chapter is followed by the major findings and conclusions emerging from the evaluation as a whole.

Chapter 4. Site Visits and Surveys: Descriptions of JSEP

This chapter presents the information collected by observing and talking with soldiers and educators as they used JSEP, complemented by the subjective evaluations these participants reported later through attitude surveys. Visits to the JSEP pilot sites comprised a major activity in the evaluation. These site visits took a naturalistic position toward evaluation, and yielded a different kind of information than that collected with the tests and records used in other evaluation activities. The major purpose of the site visits was to discover how JSEP operated in its natural setting of an Army Education Center. This in turn broadened our understanding of the other evaluation findings. We were interested here in expanding our understanding of JSEP rather than testing predetermined hypotheses, in discovering findings that were relevant to program operation, and in using observation and interview techniques that did not limit respondents to the choices decided beforehand by outside researchers (Guba and Lincoln, 1981). Mixing the naturalistic and traditional evaluation paradigms is particularly useful in evaluating untried or innovative programs. The approach helps to reassure us that important historical or contextual factors have not been ignored. It prevents us from repeating the mistake of the blind sages in the fable, of letting our expectations about ropes and umbrellas keep us from perceiving the elephant that is actually there.

Conducting the Site Visits

Six of the seven installations piloting JSEP were visited between mid-February and mid-April 1988. The seventh pilot site, Walter Reed Army Medical Center, did not begin using JSEP until the middle of February. Because experiences here differed so much from those at other sites, Walter Reed was not included in this set of site visits. Instead, the staff arranged for an evaluator to visit informally a number of times.

All of the six site visits were structured in the same manner. Following a request for access to the JSEP programs sent to the installations by the Soldier Education Division, we contacted each JSEP Coordinator to reach an agreement about the time and activities of the visit. We explained that we wanted to observe JSEP classes and to talk with students and all education or training staff members whose work involved JSEP. The JSEP Coordinator was also asked to set up interviews with past JSEP students and with several supervisors of current or past students. The typical procedure was to schedule appointments with supervisors and JSEP graduates and to talk with others who were routinely in the Education Center whenever convenient. A team of two evaluators visited each installation, spending two and one-half days on site. Interviews were usually one-on-one, but in a few instances we talked with a small group of students (for example, in a break room near the JSEP class) or with several staff members at one time. The numbers of persons interviewed at each location are recorded in Table 4.1.

Table 4.1. Numbers of Persons Interviewed at JSEP Sites (N=145)

Site	Current Enrollees	Graduates/ Dropouts	Supervisors	Education Staff
MicroTICCIT:				
Fort Lewis	11	7	--	11
Fort Riley	7	6	10	8
PLATO:				
Fort Leonard Wood	6	10	--	8
Fort Sill	17	--	2	8
Fort Bliss	9	5	2	2
Fort Jackson	5	1	1	9
TOTALS	55	29	15	46

Interviewers used standard questions ("JSEP Interview Protocols") as probes to start the conversations, and these are included in Appendix B. The questions were quite general, such as, "What do you want to get out of JSEP? How does it compare with other classes you've taken?" Much of this content was also addressed in the attitude surveys prepared for the evaluation, so we did not attempt to collect the same information exhaustively from every interviewee. Instead, we tried to get JSEP participants to tell us what they wanted to say about the program.

The observations were equally unstructured. Between interviews we watched soldiers using JSEP, occasionally asking them or their instructor to explain an activity, and noting how the soldiers worked. The focus here was on describing JSEP's use.

Soldier Attitude Survey

The JSEP instructors were asked to have each soldier complete the Post-JSEP Attitude Survey (reproduced Appendix B) upon completing the program. Completed questionnaires were returned to AIR for 175 soldiers across the seven pilot sites. The results of this survey are given in Table D.1, Appendix D, which also includes the verbatim responses soldiers wrote to open-ended questions about their opinions toward JSEP and suggestions for improving it. This chapter will discuss the survey findings as they relate to observations from the site visits. The reader is referred to Appendix D for a full display of the data.

Factors Affecting Operations

The JSEP classes were not conducted in a vacuum, and it is important to understand their context before considering the participants' assessments and recommendations about the program.

Involvement with JSEP

Two of the installations, Fort Lewis and Fort Riley, are part of the U.S. Army Forces Command (FORSCOM) that have been pilot-testing JSEP on the MicroTICCIT system and have worked with JSEP's development since September and July 1985,

respectively. The JSEP instructors at these sites were under contract to Florida State University.

The remaining installations visited were PLATO sites and part of the U.S. Army Training and Doctrine Command (TRADOC). Two of these, Fort Leonard Wood and Fort Sill, were original developmental sites. Fort Leonard Wood began working with JSEP in July 1985, followed by Fort Sill in August 1986. Their JSEP instructors were employed by, and reported to, Florida State University. The instructors at Fort Jackson and Fort Bliss, which had begun working with PLATO in the summer of 1987, were under local contracts and did not report formally to Florida State University.

The organizational and historical contexts were related to variations in judgments about JSEP. Educators, for example, tended to explain local programs in light of their setting: TRADOC posts with an education and training mission contrasted with FORSCOM posts that emphasized field responsibilities. Comments from sites that had a long history of participation in JSEP often appeared to be colored by past difficulties or explained in terms of the changes they represented. Staff at the sites using MicroTICCIT expressed a belief that this would not be the delivery system for JSEP, and thus had different projections about the program's future than did educators who worked with JSEP on PLATO.

Conditions Surrounding the Evaluation

Several conditions during the 1988 fiscal year were particularly salient to the evaluation. These included:

- Field confusion about support requirements in the Florida State University JSEP contract. At the December 1987 meeting there was disappointment about the reduced number of computer terminals and subscriptions to PLATO ports that Florida State University would support, and about the lack of expected instructor training. The contractor was also unable to support as many instructor positions as had been expected.
- Delays in completion of JSEP. Not all JSEP lessons had been corrected, and JSEP Coordinators expressed the feeling that their notes about errors in lessons

and in lesson tests were ignored. Some aspects of the soldier management system (such as default assignment of Learning Strategy lessons) were not yet in place and there was no diagnostic test to exempt soldiers from lessons on topics in which they were already competent. At the December 1987 meeting three kinds of activities were proposed for the spring: a formal program evaluation, activities to develop a diagnostic test, and scheduling various sites to host demonstrations of JSEP. We observed several instances in which instructors confused evaluation activities with others that were part of completing JSEP's development, typically when several different activities called for collecting similar information from soldiers.

- Change in use of JSEP. At the time the evaluation began, the field sites had not been using JSEP in strict accordance with recommended procedures. The JSEP Coordinators were unsure of eligibility criteria and had been generally enrolling only soldiers with a fairly high (in the 8th grade range or above) reading ability. The program was generally used as a supplement or complement to BSEP, and as a GT test preparation course. Instructors were free to create prescriptions rather than adhere to those already written for the various MOSs, and a number of "GT prescriptions" were in use. During the evaluation the instructors were asked to follow standard JSEP practices. JSEP's management system was also altered at that time to administer lesson pretests and to automatically assign Learning Strategy lessons when default criteria were tripped. Thus educators, and sometimes soldiers, often talked about multiple program formats when they referred to JSEP in interviews.
- Fund reductions. Budget reductions unconnected to JSEP were imposed on the Army Continuing Education System in January 1988, and by the close of the evaluation period funding had decreased by about 25 percent. Much of this reduction was reported by local Education Center administrators to have been absorbed by basic skills programs. Concerns and projections about financial support were evident in educators' predictions for the future of JSEP.

The JSEP Classrooms

This section briefly describes the physical settings in which we observed JSEP. Sites are identified here to help the reader form a picture of the different classes. Subsequent sections will not identify the installation from which a comment or observation was made.

MicroTICCIT sites. The JSEP laboratory at Fort Lewis was a large, well lighted room on the first floor of a building constructed during World War II. There were six JSEP personal computers set up in cubicles at one end of the room, and the JSEP instructor had a desk near these.⁶ A teacher's desk and several desks and small tables for students were located at the other end of the room. There was no door closing the room from the hall, and while the room was generally quiet we thought there was some disruption when visitors came in to ask where other offices were located, or when meetings were held in the room. The MicroTICCIT computer was in a separate small, air-conditioned room adjacent to the instructor's desk. The JSEP instructor circulated constantly among the students during our observation, asking if they needed help and providing instruction when it was required. Classes were held in both the morning and afternoon so that a total of 12 students could be served on any day.

Fort Riley's classroom was in a room at the back of the one-story First Brigade Learning Center, a converted mess hall in the "Custer Hill" (enlisted section) of the post. This was about five miles from the main Education Center building, and so a counselor assigned to the Learning Center had more daily contact with the JSEP instructor than did the JSEP coordinator. There were 15 MicroTICCIT stations. The main computer was in the "kitchen" adjacent to the classroom, and the instructor did much of his paperwork in that room. Soldiers worked in fairly open carrels arranged around the walls of the room. The lighting was good. There was some traffic, since a back entrance to the building opened into this room, but passers-by did not seem to distract students. Separate classes were scheduled for the morning and afternoon. On Wednesday morning the instructor held team training, at which soldiers (often three to a computer) from a given unit worked on

⁶The number of students served depended upon the number of functioning terminals. This could change from day to day. Immediately prior to the evaluation the sites reported these numbers: Walter Reed AMC, 10; Fort Lewis, 7; Fort Riley, 13; Fort Sill, 11; Fort Leonard Wood, 8; Fort Bliss, 8; Fort Jackson, 10.

a selected lesson. The instructor was on his feet constantly, and appeared to encourage students or to relate their lessons to Army jobs as much as he helped them with instructional or mechanical problems.

PLATO sites. At Fort Bliss JSEP classes were conducted in a small room with three closed windows on the first floor of a building constructed during the Second World War. The building was marked, "Disposal 1988." The fluorescent lighting was adequate. There were problems in regulating the temperature during our visit, with the room alternately uncomfortably hot or cold. The room contained seven terminals, six of which were used for JSEP, and desks for the JSEP instructor and PLATO lab technician. Space was crowded when all of the terminals were occupied, especially when the BSEP teachers came in to talk with the JSEP instructor and PLATO lab technician. The noise level from people moving in and out was fairly high. The PLATO lab was next to the JSEP room, and upstairs the building contained BSEP classrooms, a small office, and a students' lounge. Two sets of classes were held each day. The instructor frequently walked around the room, asking students if they needed help and commenting on their work.

JSEP at Fort Jackson was housed in a modern Learning Center built for continuing education activities. Rooms were bright, carpeted, filled with plants, and generally very comfortable. JSEP was located in a PLATO lab on the ground floor in a room that was crowded but well-lit and fairly quiet. Classes were held for four hours in the morning and in the evening. There were 15 terminals available for JSEP. These were spread around the walls of the room and along a row of face-to-face carrels down the center. A work table used by the instructor was at one end of the room. She could sit at this table and observe four or so students, or could move from terminal to terminal. The instructor was on her feet most of the time we observed her, often giving instruction or overriding program errors. Fifteen students began JSEP the first day of the visit and they kept the instructor and the JSEP coordinator constantly busy. Students, particularly those using JSEP in the evenings, helped one another with advice about misunderstood test questions, how to handle mechanical problems, which lessons to choose, and similar matters.

The Learning Center holding JSEP at Fort Leonard Wood was a pleasant, one story building that was constructed originally as a post exchange. There were a number of classrooms (many of them empty, we were told, because of recent budget cuts) around a

central core of offices. The six JSEP terminals were in one of these, a room about 12 feet square, adequately lighted although there were no windows. The terminals were arranged along two walls in half-carrels that allowed soldiers to observe one another or talk if they leaned back in their chairs. The instructor's desk and file cabinet were at the back of the room, facing the terminals. She usually remained at this desk, unless asked for help, in what she explained was a deliberate effort to intervene as little as possible with the computerized lessons. The room was very quiet.

Fort Sill housed JSEP and the PLATO learning lab in a big metal-roofed building that was constructed to store large vehicles or earth moving equipment. Previously, each program was allocated half the building. Following reductions in Florida State University's contract, the terminals on the JSEP side had been disconnected and packed for shipping, and classes were held in the PLATO lab. This room contained 12 terminals devoted to JSEP arranged in a maze of large cubicles separated by 5-foot tall partitions. To prevent glare on the screens the overhead lights had been turned off and there was a small desk lamp in each cubicle. The room was very quiet. There were several small offices at one end, and the PLATO lab coordinator and JSEP instructor had desks in the classroom area. The instructor did not sit down during the time we observed, but walked from cubicle to cubicle watching students to see if they were working or needed help.

Survey description of logistics. Most of the soldiers who completed the attitude survey following JSEP reported that they had been enrolled for four to six weeks (59%), for four hours a day (79%), five days a week (86%). Two-thirds (67%) completed their prescription of JSEP lessons by the time they left the program. Almost all (93%) listed English as their native language.

Soldiers' Comments

We talked with 84 soldiers across the six installations: 55 who were enrolled in JSEP and 29 who were earlier graduates (25) or dropouts (4) from the program. The discussion of their comments will note when remarks were influenced by whether a soldier participated before or during the evaluation period. The numbers of soldiers making the same comments are reported in this section because they give a sense of the relative

frequency of different opinions and beliefs. When percentages are given they are based on the number answering a question.

What Soldiers Wanted From JSEP

Seventy-six of the soldiers gave their reasons for enrolling in JSEP. The overwhelming response was to improve GT test scores (84%). Some went on to explain why the GT was important. These soldiers needed score improvements to reenlist, qualify for a new MOS, increase quality points for promotion, or meet criteria for Warrant Officer School. Soldiers were next most likely to see JSEP as a source of self-improvement (13%) that would help their math or sharpen their basic skills. Smaller numbers said they were taking JSEP to prepare for the SQT (Skill Qualification Test) (5%) or prepare for other education, such as college (12%). One soldier appeared to be joking said he was in class because he was "hungry for power," and saw JSEP as a way to prepare for the college education that would lead to it. Drill sergeants not working in their MOS were most likely to want SQT preparation. Motivation for GT improvement was about evenly split between the desire to qualify for a new MOS and the need to be eligible for reenlistment.

Survey description of goals. Among the 175 soldiers completing the attitude survey, 47 percent said they had enrolled in JSEP because they wanted to; 18 percent had done so at the recommendation of their commander. The 23 percent who wrote in an answer to this question said they enrolled to improve their GT scores. When asked in a subsequent question to check the primary reason for enrollment, 86 percent marked "to improve GT," and 11 percent did not respond to the question. Five other reasons (e.g., pass SQT) were checked by one person each. Qualifying for a new MOS may also have been a motivation; 38 percent of the soldiers did not like their duty MOS and wanted to change it.

Achieving Their Goals

Sixty-two of the soldiers who were interviewed commented on whether they had reached the goals they had set for themselves with JSEP. For many of the current enrollees this was an estimate of whether they would reach these goals by the time they had finished the program.

The great majority (74%) said "yes," they had achieved what they wanted entirely or to some degree. Some graduates cited increases in GT or TABE scores that they attributed to JSEP; one soldier said that he had passed an entrance test for flight school. Others simply said that they had learned what they wanted, or that they thought they would reach their GT score objectives. Some of the answers were qualified. One soldier thought JSEP would help a little with GT testing, but not at all with his MOS. Another graduate said JSEP had no effect on his job, but put him ahead of others in his BSEP class. (The practice at all installations was to enroll soldiers in BSEP II or some other GT preparatory activity after they had completed JSEP.)

About 18 percent of those who responded to this question said that they had not reached their goals with JSEP. One dropout noted that he had learned a little about computers but that was not what he had enrolled for. Others said JSEP was not job relevant. The remainder (8%) were unsure about whether they met, or would meet, the goals they had set for JSEP.

Survey reports of overall effects. Several of the survey questions completed by the 175 participants dealt with global effects of JSEP. Seventy-seven percent believed that JSEP had increased their motivation to learn; only 2 percent thought they had become less motivated due to the program. When asked how much they had learned, 54 percent said "a lot," and 42 percent said, "some." In general, they were of the opinion that JSEP had helped the most by improving their math skills (70%), improving their reading or verbal skills (37%), or teaching them how to use a computer (32%).

The survey group was more positive than the interviewees about JSEP's applicability to job performance. Twenty-one percent believed that the computer-based instruction helped them learn or improve job skills. When asked what effect JSEP had on how well they did their jobs, 25 percent thought they had learned much of use and 42 percent thought it had helped a little.

Benefits and Problems

The question of goal achievement was close to that of secondary benefits or problems associated with JSEP participation. Twenty-six of the interviewed soldiers (31%) did not suggest any benefits gained or problems encountered through JSEP. Of those who

did talk about this area, 52 percent said that the lessons had not been relevant to their jobs. Others disagreed. Some thought all or parts of the lessons were useful on the job (17%); that JSEP had helped with unit training (5%); or that it helped prepare for the SQT (7%). One soldier believed JSEP had enabled him to qualify for reenlistment while another expressed the idea of prerequisite competencies when he told how JSEP had taught him the reading and math skills he needed to learn his job. About 22 percent thought that JSEP lessons were relevant to the Common Tasks Test (CTT).

Only three soldiers mentioned attitudinal outcomes. One dropout said the faulty computer program that refused to accept his correct answers made him feel stupid. On the other hand, two soldiers volunteered that JSEP made them feel good about themselves.

Seventeen soldiers made some reference to the effects of JSEP in pulling them away from their jobs. Of this group, 47 percent said there were no problems -- they had good unit support, a commander who actively encouraged education, and the like. Thirty-five percent had encountered some problems -- missing work, or the feeling that there was resentment from their peers or supervisors. A few (12%) had not seen resentment, but had been assigned night duty while in JSEP and were simply tired. An equivalent number had been pulled out of class for work responsibilities and saw this disruption as causing problems in their learning.

Survey descriptions of secondary effects. One survey question asked soldiers to note whether participation in JSEP had resulted in any peripheral benefits or difficulties. As with the interviews, the survey data uncovered few resultant problems. Thirty-one percent said there were no major problems. A few (4%) felt their commander had not liked them spending time in JSEP or that the time spent in class had held them back from their units. The survey soldiers were more likely to check that they had enjoyed benefits from JSEP: motivation to learn (57%), increased self-confidence (45%), a break from routine (43%), or improved GT scores (34%).

JSEP and career goals. In talking with soldiers about what they expected, and saw themselves getting, from JSEP it became clear that they view education from the perspective of their careers. Test scores determine enlistment eligibility, promotion, and access to desired MOSs; they serve as gates to the further education that is a determinant of the same benefits. When JSEP's contributions to MOS performance were

cited, it usually appeared to be an afterthought: "some of that math comes up on my job." In general, the soldiers interviewed during this evaluation were in JSEP to improve their GT scores; thought they would do so; and, in some cases, believed that this improvement would be because of JSEP. It should be stressed that these were the soldiers' perceptions. Actual performance changes, reported in Chapter 3, were small.

Attitudes Toward JSEP

The preceding comments may seem like faint praise, but this should not imply that the soldiers did not value JSEP. They did. Some 91 percent of those who had an opinion about JSEP liked the program, and found it to be easy, interesting, challenging and fun. Many soldiers said they simply enjoyed having the lessons on computer. One student said that he became so absorbed in lessons that he lost all sense of time. Others said they did not become bored and fall asleep with JSEP as they had with human teachers. (At only one site did we observe soldiers falling asleep during afternoon classes.)

Attitudes reported in surveys. The survey asked soldiers to note whether they had liked any of a number of characteristics of JSEP. The largest proportion said they liked the things they had learned in the lessons (64%). Fifty-three percent each appreciated the chance to learn and study by themselves and the chance to use a computer. They also enjoyed the way that JSEP explained things (43%).

When asked what they disliked, 36 percent of the survey soldiers responded, "Nothing in particular." The negative factors cited most often were problems with the computer (26%), errors in the JSEP lessons (21%), and the way the computer responded to their answers (15%). About half of the soldiers liked JSEP a lot when they began (54%); a larger number (69%) liked it a lot when they finished.

Surveys and interviews: JSEP and learning style. JSEP appealed particularly to one kind of student. This was the soldier who had a low tolerance for lectures and books, who disliked reading, and who wanted individualization in pacing and instruction. During interviews, these learners praised JSEP because it was easier than classes and required less reading and writing. The word "boring" appeared often in their comments when they talked about school or studying.

A second type of learner saw JSEP as an efficient and painless way to revive knowledge forgotten since high school. As one put it, JSEP was a review of "Things you know you knew." These soldiers often referred to JSEP as a "refresher" and were attracted by its self-paced, individualized design and by the privacy it offered.

A smaller proportion of soldiers (9%) did not like JSEP. When they gave a reason it was dislike of the computer: "Sitting in front of a computer four hours a day is boring as . . ." Or, they simply preferred to be taught, as one man put it, "Cave-man style, by an old fashioned human teacher."

The attitude survey asked specifically about the congruence between JSEP and the soldiers' preferred learning styles. These soldiers felt JSEP explained concepts clearly (56%), showed them how to carry out skills step-by-step (74%), gave practical, useful illustrations (53%), and allowed them the opportunity to practice new learning (54%). They felt that JSEP helped them to learn at their own pace (87%), practice until they got a task right (89%), see material step-by-step (89%), and discover how to do things on their own (87%). When asked if anything about JSEP frustrated them or prevented them from learning, 24 percent said they didn't have any trouble learning with the program. Those who did mention instructional frustrations were most likely to cite not being able to see what they got wrong on tests (63%), or that the illustrations took too long (31%). (It should be noted that the graphic displays were slower on the PLATO system than on MicroTICCIT.) In responding to a question about whether they learned best from a teacher or a computer, 54 percent said that they did not prefer one format consistently. The other responses were balanced: 17 percent preferred the computer, 15 percent preferred a teacher.

About one-fourth of the interviewed soldiers volunteered a comparison between JSEP and BSEP. Of that group, two out of three preferred JSEP, usually saying it was less boring than BSEP or that it let the learner move at his or her own speed. Five soldiers thought the two programs were basically equivalent and liked them equally. Three said that they learned more in BSEP because it was a paper-and-pencil course. On the survey, 52 percent of the soldiers believed JSEP should be used as a part of BSEP. Some 23 percent believed the computer-based program could completely replace BSEP.

Perceived Strengths of JSEP

Not unexpectedly, many of the characteristics that soldiers identified as JSEP's strong points were the ones that made them like the program. The computer itself was seen as a good teacher, as a motivation to learn, or simply as less boring than a lecture and workbook format. Soldiers who liked the computer said it kept their interest up and made time fly. Some others of the reported strengths were basic aspects of computer-based instruction. Soldiers liked working at their own pace; not having to wait for others as they might in a lecture class; being able to review material; and feeling that the lessons and instruction were individualized. They appreciated the privacy they had, and described the computer as an "infinitely patient" teacher. Soldiers also said they valued the efficiency of the system. A number cited the pretests (which were added for the evaluation and available to only the two-thirds of the PLATO system interviewees who had not completed JSEP before then) as a particularly good aspect. Several liked the idea of short lessons that gave a brief review followed by more detailed long lesson instruction only if it were needed. The flexible scheduling was described as a benefit. There was also recognition of the control the management system exerted. Soldiers said JSEP was effective because "You can't cheat," or, "It won't let you go on until you've got it right." Several said that the strictness of the test formats, which could reject a substantially correct answer because it was not stated in the required manner, taught self-discipline.

This was echoed in remarks about the content. Soldiers thought one of the strengths of JSEP was the way in which it presented material step-by-step and in more detail than a textbook or teacher might. They believed the directions were clear and comprehensive, and the content was understandable. A few soldiers mentioned the review of materials when a test was failed as a good thing. Others cited the graphics as one of the best parts of JSEP, while some picked out the Introduction and Time Management Lesson as particularly helpful.

On the other hand were those who thought JSEP worked because of what it didn't require. They stated they liked JSEP because there was less reading and writing, and not as much pressure to produce, as in other learning settings. A few thought its strongest point was its games. (There are games included in some of the JSEP lessons.)

Math was mentioned as a strength more often than language skills were, especially when soldiers described JSEP as a "refresher." JSEP was considered a good review of fractions and geometry. A few soldiers thought it was strong in developing vocabulary and reading comprehension. Comments about the content overall described it as a good review of material forgotten since high school or Army common task training, and as preparation for tests such as the CTT, GT, or GED (General Educational Development) test.

The JSEP instructor was frequently mentioned as a strength of the program. He or she was helpful, supportive, and able to explain material when the computer instruction did not suffice, in the soldiers' opinions. At times it sounded as if the soldiers were describing a team-teaching relationship between JSEP and the human instructor.

Perceived Weaknesses in JSEP

Sixteen, or about one in five of those interviewed, either failed to mention any weaknesses in JSEP or said explicitly that it had none. Among soldiers who did report problems, two came up with notable frequency.

The first was that of errors or difficulties with the content or management system. Soldiers reported that test answers were wrong, that touch screens refused to accept their responses, that there were errors in the content of the lessons. It should be noted that not all of what soldiers saw as errors might be viewed as such by program developers. From some remarks it appeared that learners saw the management system's accepting "2 1/4 Gal" as an answer but not "9/4 Gal" (this example is fictitious) as an error when they were not specifically told to reduce their answer to lowest terms.

Tests were the second major source of perceived weaknesses. Many soldiers thought JSEP would be improved if they were told which items they missed on a lesson test; many of these wanted the review lesson that followed a failed test to be limited to the area failed, not to include an entire lesson. Not knowing what they had answered wrong, and being made to repeat an entire lesson, aroused some hostility; one enlisted woman said, "Sometimes, if that machine had a neck"

A few soldiers did not like the lesson pretesting that was instituted for the evaluation. Most of these simply wanted the option of taking a lesson if they disagreed with the pretest's decision that they already knew the content. A few said they knew from a lesson's title whether or not they needed to take it, and that they felt the pretest was embarrassing or a waste of time.

Some soldiers did not like computer-based instruction. Unlike others, they found learning from a computer to be boring. For these, JSEP was too slow, the screen gave them a headache, they wanted human interaction with a teacher ("You don't have to push a button to make her work!"), or they simply could not tolerate three or four hours of concentrating on a computer terminal. A few soldiers thought the content of JSEP was too basic for their needs. More found the requirement to repeat an entire failed lesson, coupled with the slowness of the PLATO graphic displays, very frustrating. One soldier calculated that he spent two hours a week waiting for an instructor to help him log on and off as he worked on paper-based lessons, and cited this as a waste of time.

There were soldiers who thought the paper lessons were not as well designed as the on-screen ones, or that moving to a paper lesson broke the pace and concentration they had established with the computer. Several thought the Introductory and Time Management lessons were too long or had little practical use. Other soldiers wanted additions to JSEP, particularly in language arts areas. They wanted lessons expanded or added in vocabulary development, paragraph comprehension, writing, spelling, or mathematics word problems. A few said the absence of timed tests limited JSEP's value as preparation for the GT or SQT.

Soldiers occasionally thought the mathematics lessons did not explain their content adequately or that the rigidity of the lessons was a problem -- if a student did not learn it the first time, repeating the instruction verbatim probably would not help, in their opinion. One man complained because some competencies did not have a long lesson; in his opinion, if you failed the short lesson you were lost.

In summary, a relatively small number of soldiers cited as weaknesses basic aspects of computerized instruction that cannot be changed. These learners found the organization and delivery of JSEP incompatible with their learning styles. Others reported weaknesses that appear simple to amend. Problems with test items, getting the touch

screen to respond, and errors in the lessons themselves should be readily correctible. In fact, these errors are not listed in detail in this report because JSEP's lesson review process has been collecting this information for several years.

Instructional Critique: Survey Responses

The attitude survey asked soldiers to give their subjective ratings of a number of the curricular and instructional aspects of JSEP. These agreed with, and expanded upon, the comments that have been discussed as perceived strengths and weaknesses of the program.

The majority of the soldiers rated all of the major program elements as useful. They described as "very useful" the lesson pretest (63%), the short lesson (67%), the test after the short lesson (72%), the long lesson (55%), and the test after the long lesson (62%). The soldiers also judged the Learning Strategy lessons to be helpful, particularly the modules on test-taking (89%) and problem-solving (83%). However, soldiers rated Learning Strategy lessons as useful even when they had not taken them, which led us to suspect that many soldiers evaluated JSEP's overall effect on test-taking or reading comprehension skills rather than the individual lessons in which these skills were addressed separately. On the topic of lesson assignment, most soldiers checked that the lessons they had been given were the ones they needed (53%) while a smaller number (24%) felt the assigned lessons were mostly not the ones they needed or wanted. About one-third (37%) said they would like to change the way JSEP is set up.

Soldiers generally rated specific elements of JSEP as "excellent" or "good." Only a half dozen items were judged to be "poor" or to "need improvement" by as many as 15 percent of the respondents. These were the computer's response to student answers on practice questions (19%), the way tests were scored (18%), the choice of lessons assigned (21%), the length of lessons (15%), the amount of time spent in JSEP (15%), and the civilian content of the lessons (15%).

Finally, the soldiers were asked if they had experienced any of several problems in using JSEP. The survey respondents did not judge the program in general to be difficult. Most felt the lessons were at the correct level of difficulty (61%); a few (3%) thought they were too easy but no one thought they were too hard. When asked what was most

difficult about JSEP, 46 percent responded that nothing was difficult. Some (39%) reported problems in maintaining their concentration while they worked with the program.

About one-third (31%) reported having no computer problems. Others said they had encountered difficulties when the JSEP program marked a correct answer wrong (42%), got "stuck" in a lesson (e.g., the screen froze or program errors would not let a lesson continue -- 29 percent), or the computer did not respond to their commands (18%).

Advice and Recommendations About JSEP

Even though the soldiers were able to point out weaknesses in JSEP, their usual recommendation was that the Army keep the program and many volunteered that they would, "Recommend JSEP to anyone." Several interviewees and 61 percent of the survey respondents suggested that no changes be made. Others thought that JSEP should develop language arts lessons to provide more comprehensive preparation for career tests or further formal education. They recommended that JSEP add prescriptions so that it would cover all of the MOSs at any installation using it, and some suggested that MOS training could be logically added to JSEP's pre-MOS education. There were those who thought that college preparatory courses and college credit courses could be taught in a computer-based format similar to JSEP's.

The students made recommendations about the audiences and uses for JSEP. Several soldiers advised that it be used to teach common tasks to recruits before their duty assignments, or that all soldiers with a GT of less than 110 be referred to the program. Others saw JSEP as a general basic skills refresher that they would suggest for anyone who had been out of high school for a while.

While a few soldiers said that JSEP could replace BSEP, a larger number advised the Army to keep both programs. This agreed with the 52 percent of the survey respondents who believed JSEP should be used as a part of BSEP. JSEP and BSEP were either seen by those with whom we talked as complementary to one another or as alternatives for soldiers who have different learning styles. A number warned that JSEP should not drop its instructors. They thought the program would lose effectiveness without its human partner. This was somewhat in disagreement with the survey responses. In those data, 33 percent of the soldiers noted that they "rarely or never" went to the instructor for help.

When assistance was requested, it was most likely to be with problems in understanding lessons (38%) or with computer problems (31%). The soldiers said the instructors helped by offering an alternative explanation (55%) or adjusting the computer (31%). One possible explanation for the discrepancy between interview and survey data is that soldiers rarely asked for help because the instructors generally spent their time circulating among the students, providing assistance before the soldiers requested it. Finally, several soldiers pointed out that learning from JSEP takes concentration. Completing a prescription on their own once the allocated time had run out, or working lessons after being on duty all night, was difficult. They recommended keeping JSEP as an on-duty program and setting up procedures, such as block pacing, that would minimize the chances of a learner's being pulled for duty in the middle of a prescription.

Education and Soldiers

We talked with soldiers about JSEP because we believe that how a program is perceived will affect how it is used, and because it seemed logical that a program customized to teach MOS prerequisite competencies would also be customized for its Army users. A major theme that emerged from these interviews was that the JSEP participants were a distinctive type of learner. Admittedly, a small number gave the impression they had enrolled in JSEP because it was easier than their jobs, and a few didn't like the Army. But the great majority reflected some common beliefs and values that distinguished them as Army learners:

- Education (in this instance, JSEP) is valuable as it contributes to a mission. JSEP is a basic skills program. The perceived mission of basic skills programs is to improve performance on career tests: GT or SQT. Therefore, JSEP is seen as good to the extent that it improves test performance.
- Efficiency appeared to be highly valued. Errors in instructional content, lesson tests, or the programming that governed the manner in which JSEP responded to a learner were very poorly tolerated. The soldiers using JSEP appeared to be less forgiving of flaws in the program than we would have expected a comparable civilian audience to be.

- We perceived time to be the enlisted member's major currency in the social economy of the Army. Any sense that an educational program is wasting time gives the message that the soldier's worth is being discounted, and produces an emotional reaction that may surprise the more leisurely-oriented civilian observer.
- Soldiers use information (education, training, manuals) to do their jobs. While there was great faith in the instrumental value of education as it contributed to personal development, there was very little awe. To many soldiers, withholding information about which test items have been missed, or using a pretest to determine whether they can take a lesson, is like presenting them with a defective tool. They do not seem prepared to accept JSEP's design on faith, but voiced instead a "show me" attitude.

In developing JSEP, great care was taken to select competencies that related to Army job duties, and to use military situations and language wherever possible in the lessons. We suggest that equal attention be paid to "greening" the operational aspects of JSEP to reflect Army values and beliefs. This should include great attention to making JSEP as error-free and efficient as possible and to explaining concisely and convincingly how it contributes to the Army's and the individual soldier's mission.

Supervisors' Comments

The JSEP coordinator at each site was asked to arrange interviews with a few training or duty supervisors of soldiers who had completed JSEP. At two sites no interviews were scheduled because the coordinators felt that the soldiers' supervisors would not know much about JSEP or because of time constraints. At one site, on the other hand, we talked with 10 supervisors of soldiers who had participated in JSEP -- two-thirds of our total 15 interviews. Thus the distribution of supervisors is uneven across the installations piloting JSEP. Furthermore, because of timing, these were supervisors of soldiers who had completed JSEP before the evaluation began.

The supervisors (sergeants) with whom we talked represented supply units, motor pools, cooks, and clerical workers as well as other areas. Several had more than 20 years

of experience in the Army. There was considerable departure from the prepared interview questions with this group, because it appeared that, while the supervisors rarely had detailed knowledge of JSEP, they did see themselves playing a crucial role in soldiers' continuing education. They generally viewed JSEP as a new form of BSEP and did not distinguish the programs in their conversation.

Knowledge of JSEP

At the site providing the largest numbers of interviews the supervisors were relatively knowledgeable about JSEP. Many mentioned having visited the lab and talked with the instructor. They said the computerized instruction was "amazing," and that observing JSEP allayed their doubts about whether it could work. One sergeant said that JSEP did not have the "for dummies" (his words) image of BSEP, while another liked the idea of computers even if JSEP took more time than BSEP had. Another also believed JSEP was less efficient than BSEP since it did not diagnose and teach only the soldier's weak areas, but thought JSEP was still good preparation for the SQT. There was approval of the self-paced aspect of instruction, with the warning that the soldier must be willing to learn for it to work. Some of the sergeants were familiar with Army education because they themselves had taken BSEP classes. Those who said they had little knowledge of JSEP relied on counselors to place soldiers in programs.

Those who were familiar with JSEP saw it as either BSEP on a computer or as a GT improvement program. Several thought it would also help prepare soldiers for the SQT, GED Test, or college admissions Scholastic Aptitude Test (SAT).

Supervisor's Role in Continuing Education

At one installation the supervisors described having a limited role in their soldiers' education. These sergeants received a list of soldiers with low GT scores from the Education Center, and then signed off on the counselor's recommendation for soldiers referred to classes. One other supervisor described a similarly uninvolved role, saying that he "Doesn't stop people from going to school, it's good for the soldier and good for the Army," but not describing anything he did to promote participation. And there was a single supervisor who talked about screening soldiers who wanted continuing education, to

be sure that they had good reenlistment potential and were not after "sham status" that would relieve them from onerous duty.

The remaining nine supervisors talked about actively promoting participation in BSEP or JSEP among the soldiers in their charge. One said that, "Promoting education is just looking after your troops," while another said that, "The more you help your soldiers the more it helps you." They believed that supervising was synonymous with training, and that a large part of their job was to improve soldiers and help them better themselves. The sergeants did this by reviewing the records of soldiers newly assigned to their units to see which ones needed to gain a GED or raise their GT scores. They then referred eligible soldiers to the Education Center, sometimes taking the soldier there to meet with a counselor or, for a particularly good soldier, calling the Education Center to plan how the soldier's work would be scheduled around classes. A few sergeants said they checked with the Education Center periodically to monitor a soldier's progress.

The supervisors gave two rationales for this kind of careful attention. The first was pragmatic: developing good soldiers was their job and what they were evaluated on. The second was a form of mentoring. Several sergeants said they encouraged basic skills education because BSEP had been instrumental in their own success and they wanted others to have this opportunity. One sergeant pointed this out when he told us to look at a supervisor's rank and age. He said that the higher an NCO has gotten, and the longer he or she has been in the Army, the higher this NCO would rate education.

Effects of JSEP

Although several supervisors said they had not noticed any effects yet in the soldiers they had referred to JSEP, others felt that they could point to outcomes. These included mention of soldiers having raised their GT scores by 15 to 20 points. One said the average GT score in his unit had increased by 23 points. Another sergeant thought his soldier was doing better on the job, and two said that the soldiers they had referred were now more reflective -- they thought before they acted.

Attitude improvement was the effect cited next most frequently after GT improvement. Two sergeants made general comments that sending soldiers to JSEP or BSEP made the enlisted members feel that somebody cared about them, or that "This guy's

helping me, so I'll do a good job for him." Less optimistic was the sergeant who said that all but one of the soldiers he had sent to BSEP had left the Army. This supervisor thought continuing education was too often abused as a way to get out of work.

Role of JSEP in the Future

The supervisors talked about how they had seen continuing education evolve during their time in the Army, and whether they thought it would be needed in the near future.

They believed that education's role has changed in the Army. For example, one sergeant stated that when he enlisted, education was what you did with "Guys you wanted to get out of the way." Now, the entire Army is geared to run on education and test scores. Today's recruits were described as better educated and smarter, more sophisticated, than those of 10 years ago. When one sergeant enlisted 22 years ago, "80 percent needed BSEP. Now it's 20 percent." The sergeants said that many Army jobs are more complicated than they were in the past. One sergeant thought that this was causing a problem in training. Trainers today taught subjects, not people, and he saw young officers unable to teach enlisted personnel effectively -- overwhelming them with technical information they did not understand and leaving them "With their brains smoking."

The lone dissenter was the sergeant who thought soldiers often took advantage of basic skills education. He believed that it should entail pay-back obligations to discourage soldiers who had no intention of reenlisting from using JSEP as a way to avoid work or to get a free GED.

The sergeants saw themselves continuing to send soldiers who had good attitudes and job performance to basic skills education in order to keep them in the Army. They voiced the belief that education makes a better soldier, and that the opportunity for education (toward which BSEP is often the first step) is a major reason for many to enlist. One sergeant remarked that if funding was tight, "There are other things to cut besides education." Another estimated that even with today's higher education standards for enlistment, about one in five recruits had some problems reading Army materials. And, several interviewees said both Army recruiters and immature recruits may not take

the test scores as seriously as they should. As long as the GT score plays a role in quality points and reenlistment there will be a place for BSEP or JSEP.

Summary

These 15 sergeants, selected on the basis of their having encouraged or allowed their soldiers to participate in JSEP, do not form a generalizable sample of Army opinions toward continuing education. They do, however, give one picture of how JSEP can function successfully when supervisors view educational development as one aspect of their role in managing soldiers.

These supervisors generally saw JSEP as an effective means for improving soldiers' GT scores. The test scores have a direct effect on career outcomes such as reenlistment eligibility. More indirectly, they affect attitude and job skills by giving soldiers a feeling of success and opening the door to further education.

Developing soldiers is a large part of the supervisor's job, in the opinion of those we interviewed, and one that most of them found personally rewarding. Education may be a logistical problem to integrate with military duties, but these sergeants did not see it as antagonistic or irrelevant to their mission.

Educational Staff Members' Comments

We spoke with 46 members of the educational staffs at the pilot sites. These interviews included JSEP instructors, JSEP coordinators, counselors, BSEP teachers, PLATO laboratory coordinators, and local Education Center administrators. Because we believed that JSEP might be managed differently at the six sites we asked the JSEP coordinator at each to direct us to everyone in the Education Center who had anything to do with the program. While we did use the interview questions included in Appendix B, the remarks usually fell into three categories: the respondent's evaluation of JSEP, perception of the functions it fulfilled, and projections about its future use. And, paper-and-pencil surveys were completed by 11 full- or part-time JSEP instructors. These survey responses, and the additional comments that the instructors wrote, are included in Appendix E. Chapter 4 draws upon that survey data where appropriate.

Evaluations of JSEP

The majority of those with whom we talked thought JSEP was a good program but were also able to point out its shortcomings. Generally the approval was global ("This is the way to go") while the criticisms were very specific. These criticisms are detailed in Appendix E.

Overall interview evaluations ranged from the belief of one instructor that JSEP could replace all of the existing GT and SQT improvement programs and raise any soldier's performance on those tests above reenlistment criteria, to the opinion of another that JSEP was inefficient and expensive but could probably be useful as a supplement to BSEP. Before the evaluation most installations had used JSEP as a supplement to BSEP, and when educators volunteered comparisons of the two programs it was usually to say that JSEP could not replace BSEP.

Education Center staff members described JSEP as user-friendly and highly interesting. Working with the computer was a challenge and a motivator. Several said that they had never seen a soldier asleep at a JSEP terminal but couldn't say the same for BSEP classes. They opined that warrant officers and other senior NCOs who would not enroll in BSEP because they would feel uncomfortable showing academic deficiencies would use JSEP because the instruction was individualized and all mistakes were made in private. Instructionally, the concepts of long and short lessons, self-pacing, and individualized instruction were presented as strengths in JSEP. The graphics and games were praised for their interest value. One teacher thought the most useful aspect of JSEP was that it taught soldiers to follow directions. Logistically, the open-entry open-exit nature of JSEP was seen as very efficient, and an instructor noted that the expected management system would be a useful, time-saving way to maintain soldiers' records.

While JSEP was consistently described as a good mathematics program, it was just as frequently cited for not addressing reading comprehension skills. Reading comprehension is important for all jobs because, as one respondent put it, "Reading the technical manual is the first prerequisite competency for any MOS." The only way in which JSEP was seen to affect reading was through the fact that all of the instruction required reading—either paper materials or the computer screen. This could be something of a problem, and JSEP

was described as inappropriate for soldiers with limited reading abilities, typically below the 6th grade level or thereabouts.

The subjective judgments voiced during the interviews were in general agreement with the instructors' later survey responses (see Table E.1). Most thought the soldier management system was excellent or good (36 percent gave each rating). However five or more (45%) gave ratings of "needs improvement" or "poor" to the on-line lessons, the paper-based lessons, and the classroom settings in which they worked. Like the soldiers, about two-thirds (7 teachers) believed that JSEP should be used as a part of BSEP. Two felt that JSEP should replace BSEP.

Several respondents believed JSEP was less efficient than BSEP, largely because JSEP did not have the diagnostic ability to place soldiers in only those lessons that they needed. One person said that JSEP could not be a stand-alone program because some of the lessons did not teach the content of the prerequisite competencies they covered. The lessons gave examples rather than explanations, in this person's opinion, and additional instruction was required. In one case JSEP was described as slower than the programmed McFann-Gray materials used in BSEP, and some of the long lessons were considered so frustrating that they were described as "Chinese water torture."

At both of the MicroTICCIT sites the respondents brought up the high quality graphics and speed of the system. They said that students who later used PLATO for other instruction were often disappointed by its operation. One administrator also said that there were fewer repairs, and thus lower costs, with MicroTICCIT than with PLATO. On the other hand, staff at both of the MicroTICCIT sites complained that the system was not portable. PLATO, with its telephone-connected ports, could be carried directly to the units, while troops had to be brought to the MicroTICCIT classroom.

Two peripheral factors influenced the educators' assessments of JSEP. One was the history of JSEP's development. The most detailed and frequent criticisms reflected the fact that JSEP was not yet complete during 1988, which was intended to be its demonstration year. Lessons and lesson tests contained errors, touch screens malfunctioned, and there was no diagnostic test. This made it difficult for educators (and evaluators who talked with them) to decide whether they were critiquing the existant or proposed program. Even though one respondent said there had been "Quantam leap

"improvements" in JSEP recently, past difficulties appeared to color current opinions about the program and its future. At more than one installation the JSEP staff cited frequent and long-term complaints about the quality of JSEP that they felt had yet to receive a response. One site mentioned the difficulty in maintaining continuity when it had closed its program for six months because there were no new lessons. One noted the embarrassment of demonstrating a lesson with errors to a visiting General. There was a remark that after two years of complaining about problems with the touch screens, soldiers were still spending more time in getting the equipment to work than they were in learning the content.

As a result of this history, many of the education staff persons who had the most experience with JSEP seemed angry and doubtful that its present shortcomings would be removed. The anger appeared based in some cases on the feeling that local Education Centers had invested good faith in convincing their installations to pilot JSEP and had lost credibility when the program's delivery did not meet their expectations. More frequently the anger appeared to focus on a perceived "insensitivity." Evidences of this insensitivity included not correcting lesson errors, not acknowledging complaints from the field, and not recognizing the value of the soldiers' time when they participated in JSEP. On the latter point, there were remarks that we would characterize as almost bitter about soldiers being assigned lessons they did not need in order to test lessons, or being told to play computer games when there were no lessons for them to take. One instructor said that when he had encouraged counselors to refer soldiers to JSEP, a counselor initially expressed unwillingness to do so, saying, "They're playing chess over there!" While these problems may reflect more than anything else the different perspectives of educators and program developers, they nonetheless had a strong effect on the educators' evaluation of JSEP. A self-described supporter of JSEP reflected about as much optimism as we heard with the comment that: "It's not neater than gum -- like we thought -- but we can still get some use out of it."

The second confounding factor was the relationship between JSEP and BSEP. This is examined under the discussion of JSEP's perceived uses, which follows.

Functions of JSEP

When educators talked about what JSEP was used for it often sounded as if they were balancing two sets of contradictions in their remarks. The first contradiction was between JSEP's de facto and de jure purposes. Everyone interviewed was aware that JSEP was intended to teach the prerequisite competencies underlying MOS job tasks, but as one Educational Services Officer put it, "I've never had a soldier walk in saying he wanted to increase his basic skills so he could do a better job." Two installations said that they marketed JSEP specifically as a tool for improving prerequisite competencies; one of these noted that, given the choice, soldiers were four times more likely to enroll in BSEP. Soldiers come, or are referred, to Education Centers to raise their GT or SQT scores. Despite its intended use, the practicality is that JSEP is used largely as GT improvement. Some educators find it is used for SQT preparation, particularly at training installations in which drill sergeants work outside their MOSs but still need to pass the SQT to remain eligible for reenlistment. At one site the JSEP instructor had selected a list of lessons for common task training and units sent troops to JSEP for team training once a week. This was a procedure in which soldiers not enrolled in JSEP worked as a group to complete a selected lesson.

Using JSEP for test preparation can lead to problems that are exemplified in one instructor's remark that JSEP should be used as it was designed, but with GT supplements. JSEP was not seen as capable of standing on its own as a GT, GED, or SQT preparation course. For these purposes it needs to be augmented by instruction in reading comprehension improvement and by practice in taking timed tests. A number of respondents said that JSEP should be used as a supplement to BSEP or as an alternative for students who did not respond well to classroom instruction.

A few respondents questioned whether JSEP had a clearly defined mission. Several thought that there was little organization or progression to the lessons, which seems a reasonable perception. The MOS justifies the choice of prerequisite competencies and thus structures a prescription, but the MOS is never really seen in the lesson itself. More common were the respondents who pointed out that JSEP had the same target audience as BSEP, that both by definition taught job-related academic skills, and that JSEP was BSEP on a computer.

The isomorphic similarities between the two programs were not the only source of comparison. Because of fund reductions many installations had cancelled or curtailed BSEP classes and were placing soldiers with BSEP needs at JSEP terminals. Education Center staff believed that BSEP was likely to disappear completely and that JSEP would be its only possible replacement. To the extent that they saw a continuing need for BSEP, this made it difficult to avoid comparing JSEP with the earlier program. And, when that was done, JSEP often was seen as less efficient or less complete than BSEP.

Future of JSEP

Instructionally, the education staff members believed JSEP would last in some form as long as soldiers needed BSEP or the Army used the GT and SQT for career and training decisions. This might be interpreted as the belief that JSEP would last as long as it did a job other than that for which it was intended. There were recommendations that JSEP be considered for a variety of uses, and that the Army allow local Education Centers flexibility in what they employed JSEP for, and how they used it. In general, the idea of self-paced, individualized computer-based instruction was seen as the direction in which Army education should develop. The instructional content of JSEP was not seen as capable of standing on its own. It was not possible to tell how much these opinions might change once the program revisions are completed. And, at least two people raised the question of whether it made sense to separate education from training at the level of BSEP or JSEP.

The respondents had more questions than suggestions about JSEP's future when they discussed logistics. They believed that the MicroTICCIT system would not be used and that PLATO might be replaced by the Electronic Information Dissemination System (EIDS), in which case the JSEP management system would change. They did not know who would be responsible for the costs of maintaining equipment, updating lessons and writing new ones, or hiring teachers. On the issue of updating lessons, several persons noted that basic academic competencies are not likely to change but that the military context in which JSEP presented them would. The Army, these educators warned, had a low tolerance for anything that smacked of obsolescence.

Requirements for instructors. On the question of teachers, interviewees pointed out that JSEP was not instructor-free. This perception was reinforced by the range of duties

the instructors described in their survey responses. When asked what percent of their time was used in various tasks, instructors reported averages for circulating and observing soldiers (28 percent of their time), record keeping (19%), answering soldiers' questions about lessons (17%), showing soldiers how to use the program and hardware (13%), and helping with program or hardware problems (10%).

The JSEP instructors were also a highly qualified group. According to their survey responses, eight had been BSEP teachers before working with JSEP and all had prior experience teaching military enlisted personnel. All had a baccalaureate degree and three had completed master's programs. These qualifications were reflected in the requirements proposed for a teacher, which ranged from familiarity with the MOS system and inservice training to a teaching certificate and experience in adult education. Estimates of how many terminals a JSEP instructor could manage ranged from eight to 15. Each respondent stressed that JSEP would not work without a good teacher. One installation appeared to have changed from a philosophy of nonintervention to having an instructor who actively encouraged and assisted the students. With this change the results, reputation, and enrollments in the program improved dramatically, in the opinion of the Education Center staff.

Future instructor support. Table E.1 reports the current JSEP instructors' ratings of the training they received from Florida State University and of the importance of preparation in various areas. The second volume of this technical report (Part II Curriculum Review) discusses the quality of the JSEP Instructor's Manual and the Soldier Management System: Features and Functions that are intended to serve as instructional resource documents. Without repeating information that is available elsewhere, we need to stress here that as JSEP is used at a greater number of sites, new and inexperienced instructors will be involved. In our judgment it is crucial to the program's success that these instructors be provided with inservice training on how to use JSEP, and that accurate, easy to use manuals as well as other resources (such as telephone access to experienced instructors) be widely available to them.

Interviewees' forecasts. Projections on how JSEP would be used two years from now were fairly standard. One educator thought that it would be a classroom tool in MOS training and SQT preparation. Most, however, believed that JSEP would become part of the array of lessons available on PLATO. We understood these projections to mean that

JSEP would lose its identity as a complete program. The individual lessons would remain, but PLATO laboratory coordinators or basic skills instructors (if these remained) would choose lessons to complement the needs of the individual soldier and the specific task for which he or she was being prepared. We also inferred that this was the way in which the Education Center staff would find JSEP most helpful. This conclusion was based on their descriptions of using JSEP as a BSEP supplement in the past and on the fact that no one suggested how the Army might prevent such a loss of JSEP's identity. This seemed plausible, considering the opinions voiced concerning JSEP. Such action would be the logical way to get the most use from a program that is directed toward a need which is not felt by its users, and which is seen as insufficient in itself to meet the needs they consider important.

This chapter has described the context in which JSEP's effects, and the manner in which it is used, can be interpreted. The concluding chapter summarizes the report's findings and applies them to recommendations for JSEP.

Chapter 5. Summary of Findings, Conclusions, and Recommendations

This chapter draws upon the findings of preceding chapters to address the evaluation questions. It does not recapitulate each individual finding from the study. The recommendations with which the chapter closes are based upon the conclusions drawn from the findings.

Findings and Conclusions

Does JSEP Teach What It Sets Out to Teach?

In general, yes. When soldiers failed to demonstrate mastery on a lesson pretest, they usually passed the test after instruction. Examining the Common Core lessons, which are prescribed for all soldiers regardless of MOS, we found that soldiers passed 83 percent of the lessons in which they received instruction. However, some lessons were markedly less "successful" than others; 32 lessons were failed by 25 percent or more of the soldiers who qualified for them (i.e., who failed the pretest). On the other hand, 39 on-line lessons were passed by 100 percent of the soldiers who qualified for them.

In many cases JSEP did not have the chance to teach content because the soldiers already knew it. More than half of the soldiers passed the pretest for 91 (59%) of the on-line lessons. A total of 52 lessons were passed on the pretest by 80 percent or more of the soldiers for whom they were prescribed.

What Are JSEP's Effects on Academic Requirements for Jobs?

There were JSEP prescriptions for about 70 percent of the MOSs reported by the soldiers in this evaluation sample. Soldiers mastered most of the prerequisite

competencies in their prescriptions. On the Common Core lessons they demonstrated mastery (by pretesting out or passing a test after instruction) in 92 percent of the quantitative and 97 percent of the verbal lessons. However, in most of these lessons the soldiers demonstrated mastery on the pretest, before taking the instruction.

Soldiers showed small gains following participation in JSEP on a test designed to parallel the GT: about 3 points among the group for whom we had complete evaluation data. Instructors provided information on later testing for about one-third of the soldiers. When soldiers took the GT after JSEP and additional GT preparation, scores improved an average of 14 points, roughly equivalent to changes seen following BSEP in earlier evaluations. TABE scores reported by instructors showed average improvement of about half a grade level in reading and one and one-half grade levels in mathematics. While there was usually no additional instruction between the time a soldier completed JSEP and the time when the TABE posttest was administered, there is no way of knowing what learning opportunities had occurred between the time of the TABE pretest and the soldier's enrollment in JSEP.

Supervisors generally had not observed any change in soldier's work performance following participation in JSEP. The relatively few who did notice a difference found soldiers to be more self-confident and less impulsive in making decisions. However, many of the JSEP graduates and their supervisors who were interviewed cited specific test score improvements they attributed to the program.

Does JSEP Work as Intended?

The answer to this is a qualified "yes:" in some ways, for this possibly atypical evaluation sample. When we look at the Common Core lessons, soldiers pretested out of 64 percent of them and failed 6 percent. This can be interpreted as JSEP's "working" for the remaining 30 percent. However, the soldiers in this sample had reading and mathematics achievement levels above what might typically be expected for BSEP classes: 10.1 and 8.7 grade levels in each subject respectively. This explains in large part why so many soldiers pretested out of so many JSEP lessons. Although the sample did not include those with fifth or sixth grade reading levels whom the instructors feared would not be able to use JSEP, the evidence was that the lower a soldier's reading, math, and

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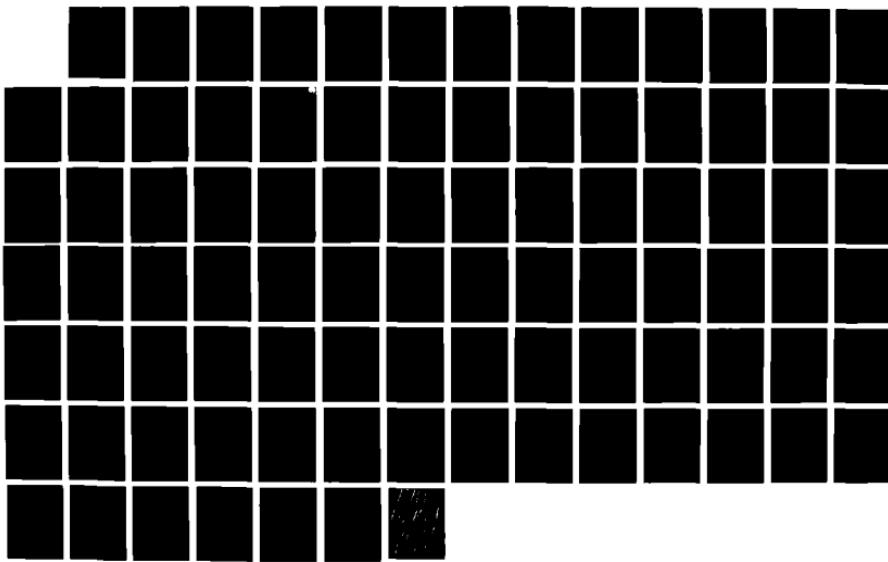
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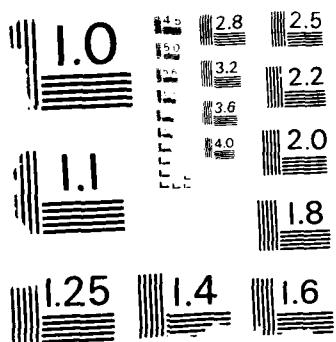
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GT test scores, the less likely the soldier was to pass JSEP lessons on pretest and the more likely the soldier was to fail lessons after instruction.

About half of the soldiers were able to complete the on-line lessons in the Common Core prescription in 43 hours of instruction or less, but there were wide differences in the time needed by the fastest and slowest soldiers in every lesson. And we have no time figures for the paper lessons, since this information was not collected by the management system. The JSEP management system on PLATO was adapted for the evaluation in such a way that soldiers were given a maximum of two exposures to the instructional content: once through the short lesson, and once through the long lesson if that were needed (and available). The MicroTICCIT system was not limited by this adaptation, and soldiers attempted the content of some lessons four or five times. Thus the time-to-complete figures estimated from this evaluation are undoubtedly conservative.

Unfortunately, we were unable to observe cases in which JSEP was undeniably inappropriate. Instructors felt that the program would not work with soldiers having poor reading skills, and very few of these were included in the evaluation. Among the few dropouts we interviewed, inappropriateness appeared more a matter of temperament than reading skills. A small number of soldiers found concentrating alone on a computer terminal to be boring, lonely, or frustrating.

Soldiers and Education Center staff typically rated JSEP high on interest and enjoyability. Both groups felt that individualized, computer-based instruction was a good approach to use with soldiers who had varying abilities and needs, and who appreciated the chance to make mistakes in private. More than half of the instructors rated the content of the lessons as poor or needing improvement, and educators generally felt the program did a better job teaching quantitative than verbal skills. Some felt that JSEP was more effective than BSEP in teaching basic skills. However, more instructors and coordinators felt that JSEP was less effective than BSEP, but could still be a useful complement to the traditional classroom program.

In terms of efficiency, almost all of the Education Center staff referred JSEP graduates to additional test preparation. They did not see JSEP as sufficient for GT or SQT preparation, which were almost exclusively perceived as the needs to be met. Students and staff also insisted that JSEP required an instructor, and from their estimates

and our observations it appears that a JSEP instructor can handle no more students at a given time than can a traditional BSEP classroom teacher. We conclude that if JSEP is envisioned as a replacement for BSEP it will serve a more limited audience, be equally costly in terms of instructional staff and student time, and need supplementation in reading, vocabulary, composition, and test-taking instruction. Under these conditions JSEP may be almost as effective in improving GT performance as is BSEP.

Unresolved Issues, Untested Questions

The preceding conclusion is not a definitive judgment of whether JSEP "works," because although GT improvement was the goal of virtually all participants it was not the goal of JSEP. There are basic questions to be answered about what JSEP is supposed to do, and for whom it is intended to do it, before the program's worth can be decided.

Determining the Audience for JSEP

The target population for JSEP has not been defined clearly. The program goals and eligibility criteria that delineated the target population were first officially stated in correspondence from the Soldier Education Division in August 1987. JSEP had been under development for six years before these criteria were made explicit, and by January 1988 there was still some uncertainty as to how they fit with the program. The stated goals, for example, were to provide soldiers with the academic competencies required for job performance, skill qualification, and career growth. Eligibility was defined through Army classification test scores (particularly as these related to reenlistment requirements); undefined commander recognition of performance deficiencies that might be attributable to academic weakness; and performance on JSEP pretests that did not yet exist in usable form.

Referral on the basis of job performance, and performance on a JSEP placement test were compatible with the concepts underlying JSEP's design. But this leads to additional questions about when the program should be introduced. If JSEP teaches the competencies prerequisite to learning an MOS, then it would be most useful before MOS training is completed. But the selection criteria imply that referral will not take place until a soldier is on the job, performing unacceptably.

Furthermore, using classification test score criteria as determinants of eligibility implies a different goal for the program: increasing classification test scores, with primary emphasis on the General Technical (GT) composite. This would be readily accepted by JSEP's users. The perceived importance of the GT by soldiers, their supervisors, and educational staff cannot be overemphasized. Improving the GT score is the first and often only goal of soldiers enrolling in JSEP and the commanders who refer them to the program. Unless there is a sizable and demonstrable positive relationship between increases in GT score and improvement in the academic competencies JSEP defines as prerequisites for job performance, skill qualification, and career growth, the stated and implied goals for JSEP may not be compatible. JSEP could conceivably do an excellent job of improving soldiers' academic prerequisite competencies but have little discernible effect upon their classification test scores.

However, if GT scores did improve, this would lead to the alternate problem of explaining how this related to JSEP instruction. To our knowledge there is no solid empirical evidence that definitively links proficiency in academic skills, such as those taught by JSEP, to Army classification test scores. Fragmentary data were reported, showing increases in GT scores following JSEP combined with other remedial instruction directed toward GT improvement. Unfortunately, these data cannot tell how much of the test score improvement was attributable to JSEP and how much was explained by other instruction. We could not assume that JSEP caused all or most of the change, particularly in view of AIR's earlier evaluation findings that a number of BSEP programs were associated with substantial increases in GT scores (Hahn, et al., 1986).

Determining a Function for JSEP

One Education Center staffer has already been quoted to the effect that no soldier ever walked into his office and asked for education in order to do a better job. If the function of JSEP is to teach prerequisite competencies that will improve MOS performance, another Education Center interviewee may reflect a common belief in saying "JSEP provides us with an answer to a problem we haven't got." That remark could have been intended as a joke, but it makes the serious point that if JSEP does not meet a perceived need it will not be used.

Instructors and educational administrators at the pilot sites said that they were aware JSEP was not a GT improvement program. They also said they realized it was not a replacement for BSEP. This explanation held that BSEP was meant to disappear as higher recruiting standards enlisted fewer BSEP-eligible soldiers; JSEP might look like BSEP and might be introduced at the same time that BSEP was phased out, but the two programs had different goals and target audiences. Finally, the educators realized that JSEP was not job training. They were able to make the distinction between prerequisite and job competencies, although many volunteered that the distinction was not easy to explain to others.

In short, there was good agreement about what JSEP was not, but this included the functions for which existing programs were valued: GT or SQT improvement, general academic growth as the first step in further formal education, or job performance improvement.

In the judgment of those conducting this evaluation, if JSEP does not have a clearly defined and widely accepted purpose it will not be used. We believe that if these issues are not resolved JSEP will cease to exist as a distinct program, and will become part of the vast collection of PLATO lessons from which an instructor or learner can choose a customized selection. This would not seem an effective use of the resources that have been invested in the program.

Recommendations

These conclusions about JSEP's unresolved ambiguities, as well as other findings in the JSEP evaluation, have led us to several recommendations concerning the program's future.

1. The Soldier Education Division should initiate discussion with Education Center staff members concerning current and future needs in basic skills instruction, and how JSEP can be used or adapted to meet these needs. Such discussion should lead to specification of, and consensus about, the purposes and appropriate audiences for JSEP. We recommend discussion rather than direction

because we believe that unless JSEP addresses needs felt to be important by its potential users it will not be used.

2. All planned lesson and lesson test revisions should be implemented at this time. Lessons for which anomalous results (e.g., unusually high or low pretest passing or lesson failure rates) are reported in this study should be examined carefully by curriculum designers to determine if further revision is warranted. Revision should be followed by at least one more review to ensure that all errors have been corrected. Support (inservice training and resource manuals) for future instructors should be in final form before the program is considered complete.
3. The Soldier Education Division should consider the question of JSEP maintenance. Education staff persons agreed widely that even if the basic skills remained stable over time the MOS requirements or context in which these skills were taught would change, and that the appearance of obsolescence would prevent instructors from using the program.
4. The lesson pretest option should be retained until the Army Research Institute is perfectly satisfied that the diagnostic test currently under development is equally accurate at identifying competencies potential students have already mastered.
5. The JSEP soldier management system should be revised to notify soldiers about which lesson test items have been answered incorrectly. Additional test items should be developed for all lessons so that soldiers retaking a lesson test will not necessarily repeat the same items. Further, the cost of revising the tests so that greater flexibility in answering (or less ambiguity in directions about how to answer) is allowed should be studied.
6. The Soldier Education Division should consider allowing and perhaps encouraging extensive instructor intervention in JSEP. Correcting for program errors, encouraging students to persevere, providing alternative instruction when the computer-based program does not "work" for a student, and supplementing with instruction directed toward a soldier's individual needs, appear to be important factors in success.

7. The Soldier Education Division (preferably with input from local Education Centers) should consider how it wants JSEP to be used and should promulgate guidelines to this effect. Policy should consider whether JSEP is a unified program or a collection of lessons, how and if prescriptions are to be determined, whether paper lessons are to be required, if instructors should exempt soldiers from lessons they judge to be overly difficult or irrelevant, and what criteria are to be used in determining which soldiers should enroll in JSEP.
8. Finally, we must point out that this cannot be considered a summative evaluation of JSEP: the program was not examined in its final form, the conditions under which it operated were not typical, and the objectives against which it should be measured had not been determined. We urge the Soldier Education Division to institute some procedure for monitoring the effects and efficiency of JSEP; preferably on a regular basis, but if this is not possible, at least once when the finished program is in normal operation.

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APPENDIX A

JSEP Lessons and Tests: Type, Status, Standards

Table A.1. JSEP Lessons and Tests: Type, Status, Standards
(During Evaluation, 19 Jan--15 Apr 1988)

Lesson Name	Lesson Type (L,D,P,M)	Revision Complete (DRL)	Revision Complete (SDL)	Number Test Items	Pass Score (%)
<u>Numbering & Counting</u>					
1a. Match numeral with name	L	Y	N	20	80
1b. Write in sequence	L	N	N	12	83
1c. Identify number before, between	L	Y	N	7	86
1d. Greater/lesser than	L	N	N	10	80
1e. Ordinal position	L	N	Y	11	81
1f. Place value	L	N	N	13	76
1g. Round whole or decimal number	L	N	Y	10	80
1h. Count by 1,2,5,10, etc.	D	N	-	12	83
1i. Match number with scale intervals	D	Y	-	20	80
<u>Linear, Weight & Volume Measures</u>					
2a. Interpret linear scale markings	L	Y	Y	8	75
2b. Ident US standard & metric measures	L	Y	Y	15	80
2c. Measure lengths	L	Y	Y	10	80
2d. Ident measures: weight, pressure, torque	D	Y	-	9	77
2e. Ident measures: volume	D	Y	-	16	81
2f. Measure with non-numeric calibrated	D	Y	-	9	77
2g. Estimate size, distance	L	Y	Y	9	77
<u>Degree Measures</u>					
3a. Ident degrees & mils, angles or temp	L	Y	Y	14	78
3b. Estimate angle \leq 180 degrees	L	Y	Y	10	80
3c. Interpret azimuths, range 0-6400 mils	L	Y	Y	8	87
3d. Interpret azimuths, range 0-360 degree	L	Y	Y	8	87
<u>Time-Telling Measures</u>					
4a. Tell time: digital, analog, 24 hour	L	Y	Y	12	83
4b. Use clockface positions for direction	L	Y	Y	10	80
4c. Estimate seconds, minutes, parts hour	L	Y	Y	10	80
4d. Equivalent dates, Gregorian & Julian	L	Y	Y	10	80
4e. Convert time to hours, 10ths hours	D	Y	-	10	80
4f. Convert to Zulu (Greenwich Mean) time	L	Y	Y	10	80

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not written

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Table A.1. (Cont.) JSEP Lessons and Tests: Type, Status, Standards
(During Evaluation, 19 Jan--15 Apr 1988)

Lesson Name	Lesson Type (L,D,P,M)	Revision Complete DRL	Number Test SDL	Pass Score Items (%)
<u>Gage Measures</u>				
5a. Read & interpret gage	L	Y	Y	14 78
5b. Read & interpret display read-out	L	Y	N	10 80
5c. Read & interpret gage with color	L	Y	N	10 80
5d. Read & interpret scales with (+/-)	L	Y	N	12 83
5e. Read & interpret multiscale gage	L	N	N	10 80
5f. Match gage reading to spec	L	Y	N	10 80
5g. Read & interpret unnumbered/unmarked	L	N	N	10 80
5h. Read & interpret fluctuating gage	L	Y	N	8 87
5i. Match specs by manipulation, alinement	L	N	N	10 80
<u>Spatial</u>				
6a. Identify directions tools may move	L	Y	N	15 73
6b. Manipulate objects to aline, etc.	L	N	N	13 76
6c. Interpret spatial from 2-dimension	L	N	N	15 80
6d. Relate symbols to systems, components	D	N	-	9 77
<u>Lines</u>				
7a. Ident points, lines, segments, rays	L	Y	Y	10 80
7b. Ident vertical, horizontal, diagonal	L	Y	Y	10 80
7c. Ident intersecting, divergent, etc.	L	Y	Y	8 87
7d. Superimpose lines	D	Y	-	5 80
7e. Draw lines	P	Y	-	5 80
<u>Planes</u>				
8a. Match plane geometric & common shapes	L	Y	Y	13 76
8b. Ident characteristics geometric shapes	D	Y	-	8 75
8c. Apply shape terms to objects	L	Y	Y	10 80
8d. Match patterns, actual size & drawings	L	Y	Y	9 88
8e. Ident figure orientation	D	Y	-	8 75

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Lesson Name	Lesson Type (L,D,P,M)	Revision Complete DRL	Number Test SDL	Pass Score Items
<u>Angles & Triangles</u>				
9a. Ident angles	L	Y	Y	18 77
9b. Ident types of angles (vertical, etc.)	D	Y	-	10 80
9c. Ident types of triangles	L	Y	Y	10 80
9d. Ident altitudes & bisectors	L	Y	Y	14 78
9e. Name angles, using letters & numbers	D	Y	-	13 76
<u>Solids</u>				
10a. Recognize & match names with figures	L	N	N	9 77
<u>Terminology</u>				
11a. Ident shape & position terms	P	N	-	20 75
11b. Ident spatial orientation terms	P	N	-	30 80
<u>Addition & Subtraction</u>				
12a. Whole numbers, no carrying	L	Y	Y	16 81
12b. Whole numbers, carrying	L	Y	Y	12 66
12c. Decimals, carrying	L	Y	Y	10 80
12d. Positive & negative numbers	L	Y	Y	10 80
12e. 24-hour time	L	Y	Y	10 80
12f. Increments on measuring instruments	L	Y	Y	16 81
12g. Linear, dry, liquid, degree measures	L	Y	Y	11 81
12h. Estimate sum or difference	L	Y	Y	15 80
<u>Multiplication & Division</u>				
13a. Whole numbers	L	Y	Y	21 76
13b. Whole & decimal numbers	L	Y	Y	10 80
13c. Decimals in divisor & dividend	L	Y	Y	10 80
13d. Negative & positive numbers	L	Y	Y	14 85
13e. Estimate product or quotient	L	Y	Y	10 80

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Lesson Name	Lesson Type (L,D,P,M)	Revision Complete DRL	Number Test SDL	Pass Score Items
<u>Fractions/Decimals</u>				
14a. Estimate fractional length, area, vol	L	Y	Y	10 80
14b. Reduce to lowest terms	L	Y	Y	10 80
14c. Convert to decimals & vice-versa	L	Y	Y	15 80
14d. Convert decimals/percent to fractions	L	Y	Y	12 67
14e. Add & subtract fractions	L	Y	Y	11 72
14f. Multiply & divide fractions	L	Y	Y	20 80
14g. Estimate fraction sum, product, quotient	L	Y	Y	10 80
<u>Geometry</u>				
15a. Draw plane geometric figures	D	N	-	10 80
15b. Match geometric figures with names	L	Y	N	18 83
15c. Label objects & figures	D	Y	-	14 71
15d. Use protractor	L	Y	Y	10 80
15e. Draw perpendicular lines, protractor	M	Y	X	not available
15f. Compute area, perimeter rectangle	L	Y	N	10 80
15g. Radius, area, circumference circle	L	N	N	10 80
15h. Measure rectangular solids	L	Y	N	10 80
15i. Solve geometric problems with formulas	L	N	Y	25 80
15j. Solve oscilloscope readouts	L	N	N	10 80
<u>Combination of Processes</u>				
16a. Locate center of object	D	Y	Y	5 80
16b. Compute averages	L	Y	Y	12 83
16c. Use all processes, whole & mixed	L	Y	Y	10 80
16d. Use all processes, units measurement	L	Y	Y	20 80
16e. Use info from charts, graphs, etc.	L	Y	Y	20 80
16f. Solve conversion problems	L	Y	Y	10 80
16g. Ratio & proportion problems	L	Y	Y	7 85
16h. Use all processes, word problems	L	Y	Y	10 80

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Lesson Name	Lesson Type (L,D,P,M)	Revision Complete (DRL)	Number Test Items	Pass Score (%)
<u>Graphing in the Coordinate Plane</u>				
17a. Ident grid coordinates military map	L	Y	10	80
17b. 6-digit coordinates, map line intersect	P	Y	10	80
17c. Plot point, distance & direction given	L	Y	6	83
17d. 8-digit coordinates, map line intersect	P	Y	10	80
<u>Algebra</u>				
18a. Simple equations, one unknown	L	N	10	80
18b. Derive equivalent equations	L	N	10	80
18c. Use calculator, find power, square root	L	N	10	80
<u>Trigonometry</u>				
19a. Use tables trig functions (mils)	D	Y	10	80
19b. Log tables to multiply, divide	P	Y	9	77
19c. Trig to solve geometry, triangle side	L	Y	8	87
19d. Trig function tables (degrees)	D	Y	8	87
<u>Procedural Directions</u>				
25a. Follow directions (read, observe, etc.)	P	N	10	80
25b. Select text, materials to complete task	P	N	17	76
25c. Follow details, sequence task activity	P	N	9	77
25d. Determine message of job material	P	N	13	76
25e. Select appropriate decision	P	N	8	75
25f. Synthesize info to complete task	P	N	7	71
<u>Vocabulary</u>				
26a. Recognize meaning common words	L	Y	30	80
26b. Recognize aircraft, tank words	L	Y	22	77
26c. Ident meaning from context	L	Y	10	80
26d. Meaning contractions, abbrevs, acronym	L	Y	15	80
26e. Meaning figurative, idiomatic terms	L	Y	13	84
26f. Communication, navigation words	D	N	21	80
26g. Rifle, survival words	D	N	17	82

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Lesson Name	Lesson Type (L,D,P,M)	Revision Complete DRL	Number Test SDL	Pass Score Items
<u>Reference Skills</u>				
27a. Locate documents by code & title	L	Y	Y	10 80
27b. Locate & file, alpha & numeric	L	N	N	12 83
27c. Use table contents, index, glossary	L	N	Y	11 81
27d. Locate title, page, etc., needed	L	N	N	16 81
27e. Skim or scan for info	L	N	Y	10 80
27f. Use cross references	L	Y	N	10 80
27g. Organize info, multiple sources	L	N	N	not available
<u>Tables/Charts</u>				
28a. Obtain fact from two-column table	L	Y	N	9 77
28b. Obtain fact from table intersection	M	N	-	8 75
28c. Use complex table, cross references	L	N	N	8 75
28d. Use tables to locate malfunction	L	N	N	11 81
<u>Illustrations</u>				
29a. Ident details from illustration	L	N	Y	16 81
29b. Ident details from key, legend, list	L	N	Y	9 77
29c. Use cross-sectional view for decision	L	N	Y	12 83
29d. Use three-dimensional projection	D	N	-	6 83
29e. Use illustration to follow directions	L	N	Y	10 80
29f. Integrate visual info, many sources	M	Y	X	not available
29g. Use map ident terrain, location				lesson not available
<u>Flow Charts</u>				
30a. Ident meanings flow chart symbols	D	Y	-	6 83
30b. Use flow chart, procedural decision	D	Y	-	8 87
30c. Use to ident organization members	D	Y	-	11 81

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Lesson Name	Lesson Type (L,D,P,M)	Revision Complete (DRL)	Number Test SDL	Pass Score Items (%)
<u>Schematics</u>				
31a. Ident/locate subsystems block, etc.	L	Y	Y	10 80
31b. Ident components, signal paths	L	Y	Y	20 80
31c. Trace circuit connections in schematic	D	Y	-	5 80
31d. Ident faulty components/troubleshoot	L	Y	Y	18 77
31e. Ident symbols: components, signal paths	L	Y	Y	9 77
<u>Forms</u>				
32a. Locate block to enter info	L	N	N	12 83
32b. Transfer data onto proper section	L	Y	N	12 75
32c. Enter selected info onto form	L	N	N	19 84
32d. Write descriptive account	M	N	X	not available
32e. Use completed form to find info	L	N	Y	12 66
<u>Note-Taking</u>				
33a. Record essential info	P	N	-	45 80
33b. Accuracy & precision recording info	P	N	-	10 80
33c. Record info as sentence	P	Y	-	10 80
33d. Record info, more than one sentence	P	N	-	16 75
<u>Outlining (Topic or Sentence)</u>				
34a. Ident main idea	D	N	-	14 78
34b. Recognize titles for outline sections	D	N	-	9 77
34c. Select supporting details	D	N	-	31 77
34d. Numbers & letters to label topics	D	N	-	5 80
34e. Write training outline	P	N	-	not available

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Lesson Name	Lesson Type (L,D,P,M)	Revision Complete DRL	Number Test SDL	Pass Score Items (%)
<u>Report Writing</u>				
35a. Identify objectives, audiences, etc.	P	N	-	8 88
35b. Answer who, what, when, where, how	P	N	-	10 80
35c. Select relevant details	P	N	-	20 70
35d. Generate report, sequence events	P	N	-	40 80
35e. State general impressions of event	P	N	-	20 80
35f. Write report	P	N	-	8 75
35g. Summarize events & dialog	P	N	-	6 83
35h. Summarize major points	P	N	-	29 72
35i. Write report to justify action	P	N	-	16 75
35j. Generate report by format	P	N	-	10 80
<u>Editing</u>				
36a. Spell common words	L	N	N	30 80
36b. Spell task-related words	L	N	N	30 80
36c. Ident words needing capitalization	L	Y	N	8 87
36d. Use reference to correct misspelling	L	Y	Y	20 80
36e. Apply punctuation rules	L	Y	Y	14 78
36f. Apply common grammar rules	L	N	N	25 80
36g. Rewrite paragraph	M	N	-	6 67
36h. Appraise & adjust written communication	D	Y	-	13 76
<u>Precautions</u>				
40a. Use common knowledge prevent injury	D	Y	-	10 80
40b. Minimize safety/security problems	D	Y	-	10 80
40c. Ident appropriate emergency action	D	Y	-	12 75
<u>Recognition</u>				
41a. Ident & label objects	L	Y	Y	8 87
41b. Use, interpret hand & arm signals	L	Y	Y	12 83
41c. Identify equipment damage, defects	L	Y	N	30 80
41d. Move, aline, connect objects	D	Y	-	6 83
41e. Ident objects by size, shape, etc.	L	Y	Y	9 77
41f. No lesson	no lesson		no lesson	
41g. Choose action by sight, hearing, touch	D	Y	-	7 85
41h. Interpret & use symbols & codes	L	Y	Y	10 80

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APPENDIX B

Instruments

U.S. Army Research Institute for the Behavioral and Social Sciences

The attached data collection form is for use by the U.S. Army Research Institute (ARI) and its contractor, The American Institutes for Research (AIR), in their efforts to study the Job Skills Education Program (JSEP). We are using this form to survey JSEP instructors.

Post-JSEP Attitude Survey

Data required by the Privacy Act of 1974:

PRESCRIBING DIRECTIVE: AR 70-1
AUTHORITY: 10 USC SEC 4503

PRINCIPAL PURPOSE(S):

The data collected with the attached form are to be used for research.

ROUTINE USES:

This is an experimental personnel data collection form developed by the U.S. Army Research Institute for the Behavioral and Social Sciences pursuant to its research mission as prescribed in AR 70-1. When identifiers (name or Social Security Number) are requested they are to be used for administrative and statistical control purposes only. Full confidentiality of the responses will be maintained in the processing of these data.

MANDATORY OR VOLUNTARY DISCLOSURE AND EFFECT ON INDIVIDUAL NOT PROVIDING INFORMATION:

Your participation in this research is strictly voluntary. Individuals are encouraged to provide complete and accurate information in the interests of the research, but there will be no effect on individuals for not providing all or any part of the information. This notice may be detached from the rest of the form and retained by the individual if so desired.



Introduction

The U.S. Army has asked us at American Institutes for Research in Washington, D.C. to evaluate the Job Skills Education Program (JSEP). Since you and your fellow soldiers are the ones who have the most experience with JSEP, your opinions are very important. Only you can tell us if JSEP meets your needs, or how it can be improved. Filling out this questionnaire is voluntary. The information you give us is confidential and will not be given to your commander or included in your Army record. It is only for our use, so please be as frank as possible.

Directions

Please answer every question. On questions where you can write comments, feel free to write as much as you want. Use the back of the sheet if necessary. We want to know what YOU think. After you have completed the survey, please return it to your instructor. He or she will send it to us at AIR. Thank you very much for your help!

Background Information

Today's Date: _____ / _____ / _____
(day) (month) (year) Social Security Number: _____ - _____ - _____

Post: _____ Rank: _____ Primary MOS: _____

1. What MOS are you working in now? _____

2. How long have you been working in this MOS? _____ years and _____ months.

3. How do you feel about your current MOS assignment?

_____ a) I like this job and want to keep it

_____ b) I don't like this job and want to change it because (write in): _____

4. What is your native language?
(check one)

_____ e) English

_____ o) Other (write in) _____

Participation in JSEP

5. For how long did you take JSEP? _____ weeks.

6. Did you finish all the lessons assigned to you in JSEP?
(check one)

Y) Yes N) No S) Not sure

7. Why did you enroll in JSEP?
(check all that apply)

My commander recommended or required it

The education center recommended or required it

I wanted to take it

Other answer (write in) _____

8. What was your *primary* purpose in taking JSEP?
(check one)

a) To improve my GT score

b) To pass my SQT

c) To improve skills for my MOS

d) To qualify for a different MOS

e) To improve my general math skills

f) To prepare for the GED certificate

g) To improve my general verbal skills

h) I didn't know or wasn't sure

i) Other answer (write in) _____

9. How often did you usually participate in JSEP?

_____ hours per day for _____ days per week.

Opinions about JSEP

10. Did taking JSEP have any effect on your motivation to learn or to improve your skills?
(check one)

a) I became more motivated while taking JSEP

b) I became less motivated while taking JSEP

c) I don't know what effect JSEP had

d) It had no effect

11. In general, how difficult were the JSEP lessons?
(check one)

- a) Too easy
- b) Rather easy
- c) Just right
- d) Rather difficult
- e) Too difficult

12. What did you like about JSEP?
(check all that apply)

- The chance to use the computer
- The way JSEP explained things
- The way JSEP drew pictures and diagrams
- The way the computer responded to my answers
- The things I learned in the lessons
- The chance to learn and study by myself
- There wasn't anything in particular that I liked
- Other answer (write in) _____

13. What did you dislike about JSEP?
(check all that apply)

- The way JSEP explained things
- The way the computer responded to my answers
- The way JSEP drew pictures and diagrams
- The way tests were given
- Errors in the JSEP lessons
- Problems with the computer
- There wasn't anything that I really disliked
- Other answer (write in) _____

14. Please rate the usefulness of different parts of JSEP lessons. Circle the rating that best represents your opinion.

	<u>Very Useful</u>	<u>Somewhat Useful</u>	<u>Not Useful</u>	<u>Don't Know</u>
The test before the lesson	V	S	N	DK
The short review lesson	V	S	N	DK
The test after the short lesson	V	S	N	DK
The long extra-help lesson	V	S	N	DK
The test after the long lesson	V	S	N	DK

15. What did JSEP help you with the *most*?
(check all that apply)

Learning how to use the computer
 Learning or improving skills useful for my current job
 Improving my general math skills
 Improving my general reading and verbal skills
 Improving my knowledge of common tasks
 It didn't help me very much with anything
 Other answer (write in) _____

16. What was best about the way JSEP lessons work?
(check all that apply)

They explain concepts or ideas clearly
 They show how to do things step by step
 They illustrate things in practical, useful ways
 They give lots of opportunities to practice
 They teach things I never had the chance to learn before
 There wasn't anything very helpful
 Other answer (write in) _____

17. Was there anything about JSEP that frustrated you or prevented you from learning?
(check all that apply)

- The illustrations took too long to finish
- The lessons were boring
- The lessons repeated things too much
- I couldn't work on the lessons with other soldiers
- I didn't make enough effort
- The lessons were confusing
- The lessons were not the ones I needed or wanted to take
- I didn't like touching the screen
- I couldn't see what answers I got wrong on tests
- I didn't like how the computer addressed me
- The computer malfunctioned too often
- I didn't have any trouble learning from JSEP
- Other answer (write in) _____

18. What was the most difficult part about JSEP for you?
(check all that apply)

- Using the computer
- Reading the lesson material
- Understanding the diagrams
- Keeping my concentration
- The test questions
- Nothing was difficult
- Other answer (write in) _____

19. Please tell us how useful the learning strategies lessons were by circling the letter that best matches your opinion.

	Useful	Not useful	Don't remember	Did not take
Time management	U	N	DR	DT
Test taking	U	N	DR	DT
Motivational Skills	U	N	DR	DT
Reading Comprehension	U	N	DR	DT
Problem Solving	U	N	DR	DT

Comments on any of these lessons? _____

20. Did you have any computer problems while using JSEP?
(check all that apply)

The computer screen became messed up

I got "stuck" in a lesson

The computer marked my correct answer wrong

The computer did not respond to my commands

The computer was broken

There were not enough computers

I didn't have any problems

21. What do you think about the lessons assigned to you in JSEP?
(check all that apply)

The lessons were too easy

They were just the ones I needed to take

I wanted to change the lessons assigned to me but couldn't

Most of the lessons were not the ones I wanted or needed

Other answer (write in) _____

22. How do you usually learn best--by using the computer or from a teacher in a classroom?
(check one)

a) It makes no difference
 b) From the computer, in general
 c) From the teacher, in general
 d) It depends--sometimes I prefer the computer and sometimes I prefer the teacher
 e) Not sure

23. Here are some things that usually help adults learn and remember new skills. For each one, please circle the letter that shows whether JSEP helped you in this way.

Did JSEP help you:	Yes	No	Don't know
Learn independently at your own pace?	Y	N	DK
Practice something over and over again if you didn't get it right the first time?	Y	N	DK
Be motivated to learn?	Y	N	DK
Relax and not worry about your mistakes?	Y	N	DK
Discover how to do something yourself instead of being told how to do it?	Y	N	DK
See material presented clearly step by step?	Y	N	DK

24. How often did you go to the instructor for help while you were working on JSEP?
(check one)

a) Usually more than three times per session
 b) Between one and three times per session
 c) About once per session
 d) Less than once per session
 e) Never or rarely

25. What kinds of problems did you usually ask your instructor about?
(check all that apply)

Problems with the computer
 Problems understanding parts of the lesson
 Problems with practice questions
 Problems with tests
 I rarely or never asked about problems
 Other answer (write in) _____

26. How did your instructor usually help you?
(check all that apply)

Told me to keep trying or to review the lesson again
 Tried to explain something in a different way
 Tried to adjust or fix the computer
 Gave me other books or materials to read
 Did not or could not help me
 I rarely or never asked the instructor for help
 Other answer (write in) _____

27. How much do you think you learned from JSEP?
(check one)

a) I learned a lot
 b) I learned some
 c) I didn't learn very much
 d) I didn't learn anything
 e) Not sure or don't know

28. Please rate the effect of taking JSEP on how well you do your job.
(check one)

- a) Positive effect—I've learned many useful things for my job
- b) Average effect—It has helped me a little bit on my job
- c) Negative effect—It has had a bad effect on my job performance
- d) No effect on my job performance
- e) Not sure or don't know

29. How would you recommend JSEP be used?
(check one)

- a) Use JSEP as a replacement for all BSEP classroom instruction
- b) Use JSEP as part of BSEP classroom instruction
- c) Don't use JSEP at all
- d) Not sure or don't know
- e) Other (Write in) _____

30. How did you first feel about JSEP when you started it?
(check one)

- a) I liked it a lot
- b) I liked it a little
- c) I didn't like it very much
- d) I didn't like it at all

31. How do you feel about JSEP now?
(check one)

- a) I like it a lot
- b) I like it a little
- c) I don't like it very much
- d) I don't like it at all

32. Was there anything that made your feelings change?

N) No Y) Yes. What? _____

33. In what ways has taking JSEP helped you or caused you problems?
(check all that apply)

JSEP taught me what I need to know for my job
 JSEP increased my self-confidence
 My commander didn't like me spending time in JSEP
 JSEP motivated me to learn more and improve my skills
 JSEP taught me a lot about the Army in general
 JSEP held me back from my unit
 JSEP helped me to improve my GT score
 JSEP helped me to learn a new MOS
 JSEP gave me a break from the regular routine
 There were no major benefits from JSEP
 There were no major problems from JSEP
 Other answer (write in) _____

34. Would you like to change anything in the way JSEP is set up?

N) No, I wouldn't change anything
 Y) Yes, I would change (write in answer) _____

35. Please rate the following JSEP elements. Circle the letter which best represents your opinion.

	<u>Excellent</u>	<u>Good</u>	<u>Needs some improvement</u>	<u>Poor, needs a lot of improvement</u>
The pictures on the screen	E	G	I	P
The explanations of basic ideas	E	G	I	P
The examples and practice questions	E	G	I	P
The computer responses to answers on practice questions	E	G	I	P
The level of difficulty of the reading in the lessons	E	G	I	P
The way tests are scored	E	G	I	P
The number of tests required	E	G	I	P
The computer set-up	E	G	I	P
Program features letting you control the computer screen or move through the lesson(s)	E	G	I	P
The choice of lessons you had to take	E	G	I	P
The length of the lessons you took	E	G	I	P
The amount of time you spent in JSEP	E	G	I	P
The number of lessons assigned to you	E	G	I	P
Help from the instructor	E	G	I	P
The military content of the lessons	E	G	I	P
The civilian content of the lessons	E	G	I	P

Comments. Please explain any rating you gave in the last question that could help improve JSEP for other soldiers.

36. The next 10 questions ask for a summary of your attitudes about JSEP. Please indicate how much you agree with each statement by circling the number that best reflects your opinion:

	<u>strongly agree</u>	<u>agree</u>	<u>uncertain</u>	<u>disagree</u>	<u>strongly disagree</u>
A. It was easy for me to learn to use the computer	1	2	3	4	5
B. Using the computer for three or four hours at a time was too long	1	2	3	4	5
C. I think written assignments should be used along with the computer	1	2	3	4	5
D. I think the lessons will help me to read and understand the publications I use	1	2	3	4	5
E. The skills I've learned in JSEP will help me to advance to a higher grade/rank in the Army	1	2	3	4	5
F. I think the instructor in the Education Center should teach the lessons instead of the computer	1	2	3	4	5
G. I would be willing to take more JSEP lessons on a computer if they were offered during <u>on-duty</u> hours	1	2	3	4	5
H. I would be willing to take more JSEP lessons offered on a computer if they were offered during <u>off-duty</u> hours	1	2	3	4	5
I. I think my unit commander would be willing to release me from duty to take JSEP lessons	1	2	3	4	5
J. I think JSEP should be included as an educational program offered by the Education Center	1	2	3	4	5

Please write any other comments you may have about JSEP or this questionnaire. Thank you!

JSEEP EVALUATION LOG: Number _____ of _____

INSTRUCTOR: Please maintain this log for all soldiers registering for JSEP between 19 January and 15 April, 1988. Return completed logs to AIR on 15 April.

Instructor: _____

Fort:

Social Security Number	Soldier Name	Date Enrolled	Date Left	<u>Reason left:</u> completed prescription, other assign, no interest, still in JSEP, other	<u>Variations from standard JSEP procedures and materials (write "none" if none were used)</u>
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Paper-Based Lessons: Please record the Lesson Number (LS#) and Percent Scored Correct (%SC) on the lesson test for any paper-based lessons completed by each soldier.

Prepared by: American Institutes for Research
1055 Thomas Jefferson Street, N.W.

U.S. Army Research Institute for the Behavioral and Social Sciences

The attached data collection form is for use by the U.S. Army Research Institute (ARI) and its contractor, The American Institutes for Research (AIR), in their efforts to study the Job Skills Education Program (JSEP). We are using this form to survey JSEP instructors.

JSEP Instructor Survey

Data required by the Privacy Act of 1974:

**PRESCRIBING DIRECTIVE: AR 70-1
AUTHORITY: 10 USC SEC 4503**

PRINCIPAL PURPOSE(S):

The data collected with the attached form are to be used for research.

ROUTINE USES:

This is an experimental personnel data collection form developed by the U.S. Army Research Institute for the Behavioral and Social Sciences pursuant to its research mission as prescribed in AR 70-1. When identifiers (name or Social Security Number) are requested they are to be used for administrative and statistical control purposes only. Full confidentiality of the responses will be maintained in the processing of these data.

**MANDATORY OR VOLUNTARY DISCLOSURE AND EFFECT ON INDIVIDUAL
NOT PROVIDING INFORMATION:**

Your participation in this research is strictly voluntary. Individuals are encouraged to provide complete and accurate information in the interests of the research, but there will be no effect on individuals for not providing all or any part of the information. This notice may be detached from the rest of the form and retained by the individual if so desired.

JSEP - IS
JSEP Instructor Survey

Instructions

The Department of the Army has asked us at the American Institutes for Research in Washington, D.C. to survey you about your preparation as an instructor for JSEP, and your evaluation of how JSEP is working.

It will not take long to fill out this survey. You can answer most of the questions by checking the responses that best fit your experience. Filling out this survey is voluntary. Your answers will help us to find out more about JSEP. Your comments will not be identified in any reports. Please return the completed survey to AIR in the preaddressed envelope provided for the return of evaluation materials. Thank you very much for helping us.

1. Today's date / /
(day / month / year)

2. What is the highest degree that you have completed?

3. Please check any of the following that you have studied:

Adult education

Educational foundations (e.g., learning theory, philosophy, etc.)

Teaching methodology

Special education

4. Before you were hired as a JSEP instructor, in which of the following did you have experience?

Teaching adult basic education/GED

Teaching with computer-based instructional materials

Using computers in general

Teaching enlisted military personnel

5. Have you taught BSEP or JSEP before?

No

Yes

If you answered yes, for how long?

_____ years and _____ months

6. For how long have you been teaching with JSEP?

_____ years and _____ months

JSEP - IS
JSEP Instructor Survey

7. Who trained you to become a JSEP instructor, and how long was your training? (If you did not receive any formal JSEP training, write "0" on the line next to "I did not receive any formal training.")

I was trained by: _____ Length of time for training
(hours / days / weeks): _____

An FSU staff member _____

An ACES staff member. _____

I did not receive any formal training.

I learned JSEP "on the job." _____

Other answer (write in) _____

8. Please rate how *important* you feel it is for new JSEP instructors to receive training in these areas, and then indicate whether these areas were *covered* in your JSEP training.

- Under "Important?" circle the rating that best reflects your opinion.
- Under "Covered?" circle the rating that reflects whether the area was covered in your JSEP training. If you did not receive any formal JSEP training, circle "N."

<u>Training new instructors in:</u>	<u>Important?</u>			<u>Covered?</u>	
	<u>Important</u>	<u>Somewhat important</u>	<u>Not Important</u>	<u>Yes</u>	<u>No</u>
Operating the computer	IM	SI	NI	Y	N
Getting in and out of JSEP	IM	SI	NI	Y	N
Registering a soldier	IM	SI	NI	Y	N
Dealing with computer problems	IM	SI	NI	Y	N
Helping soldiers with learning difficulties	IM	SI	NI	Y	N
Training other instructors	IM	SI	NI	Y	N
What to do if soldiers get stuck in a lesson	IM	SI	NI	Y	N
Managing the JSEP classroom	IM	SI	NI	Y	N
Operating the learning strategies modules	IM	SI	NI	Y	N

JSEP - IS
JSEP Instructor Survey

9. Please list additional areas, if any, that should be covered in the training for *new* JSEP instructors.

10. Please rate how well you were *prepared* in these areas. Circle the rating that best represents your opinion. If the area is not relevant or requires no training, circle the rating under "Does not apply."

	<u>Very good preparation</u>	<u>Fair Preparation</u>	<u>Poor/No Preparation</u>	<u>Does not apply</u>
Operating the computer	VG	F	P	NA
Getting in and out of JSEP	VG	F	P	NA
Registering a soldier	VG	F	P	NA
Dealing with computer problems	VG	F	P	NA
Helping soldiers with learning difficulties	VG	F	P	NA
Training other instructors	VG	F	P	NA
What to do if soldiers get stuck in a lesson	VG	F	P	NA
Managing the JSEP classroom	VG	F	P	NA
Operating the learning strategies modules	VG	F	P	NA

11. Please list the areas, if any, in which *experienced* JSEP instructors might need additional training.

JSEP - IS
JSEP Instructor Survey

12. After you began working as a JSEP instructor, did you have any of the following resources to help you get more information about JSEP? Please circle the rating that reflects whether you had the resource, and whether it was helpful.

<u>Resource:</u>	<u>Had?</u>		<u>Helpful?</u>	
	<u>Yes</u>	<u>No</u>	<u>Yes</u>	<u>No</u>
Contact with JSEP resource people by telephone	Y	N	Y	N
Contact with JSEP resource people through computer connections	Y	N	Y	N
Training workshops	Y	N	Y	N
Meetings or conferences	Y	N	Y	N
The <i>JSEP Instructor's Manual</i> , the <i>JSEP Soldier Management System: Features and Functions</i> , and other support materials.	Y	N	Y	N
Other answer (write in) _____	Y	N	Y	N

13. What, if any, additional support people, hardware, or systems for the operation of JSEP will JSEP instructors need in the future?

14. In general, as a JSEP instructor, how much time do you spend doing the following activities? Estimate the percentage of time you spend on each task. Remember that your answers should sum to 100%.

Showing soldiers how to use the program and hardware	_____ %
Circulating and observing while soldiers use JSEP	_____ %
Helping to solve computer problems with the program or hardware	_____ %
Keeping records and doing other administrative tasks	_____ %
Using supplemental instructional materials with soldiers	_____ %
Answering soldiers' questions about the lessons	_____ %
Other activity (write in) _____	_____ %
Total:	100 %

JSEP - IS
JSEP Instructor Survey

15. Please rate the following aspects of JSEP. Circle the rating that best represents your opinion.

	<u>Excellent</u>	<u>Good</u>	<u>Needs some improvement</u>	<u>Poor, needs a lot of improvement</u>	<u>Can't Judge</u>
The on-line instructional program (the JSEP lessons)	E	G	O	P	D
The paper-based JSEP lessons	E	G	O	P	D
The soldier management system	E	G	O	P	D
The hardware (computers and related equipment)	E	G	O	P	D
The classroom setting (i.e., the classroom, the lighting, how the computers are set up, etc.)	E	G	O	P	D
<i>The JSEP Instructor's Manual & the JSEP Soldier Management System: Features and Functions</i>	E	G	O	P	D
The JSEP training	E	G	O	P	D

16. How do you feel that JSEP can be used best?

- Use JSEP as a replacement for all BSEP classroom instruction
- Use JSEP as part of BSEP classroom instruction
- Don't use JSEP at all
- Not sure or don't know
- Other (write in) _____

17. Please give us any other comments about JSEP that you would like to add.

JSEP INTERVIEW PROTOCOLS
Educational Staff Questions

Introduction: Purpose is to provide information that will assist the Army in using JSEP as effectively and efficiently as possible. Interviews best way to get judgments and insights of those who have experience with JSEP and to whom the program is important.

- o Voluntary participation in interview
- o No AIR report, formal or informal, will identify respondents

Interviewer: Ask if there are any questions. Ask if respondent agrees to interview. Ask major question; follow up with probe question if respondent is not forthcoming on that point.

Respondent: _____ **Post:** _____

Title: _____ **Date:** _____ **Int:** _____

1. What has been your role or background in JSEP?

Probe: What do you do with JSEP? How long have you worked with JSEP? Prior experience with related/similar programs?

2. From this perspective, I would like you to give your evaluation of JSEP in several areas.

a) How well do you think JSEP is meeting its purposes?

Probe: What purposes does it address? What purposes should it address?

b) How does JSEP fit in or coordinate with other Army education? Training? General operations on the post?

Probe: Can you give some examples that illustrate that?

c) What are JSEP's strengths?

Probe: Best points? Things it does that prior programs didn't? Any unexpected benefits?

d) What are JSEP's weaknesses?

Probe: Things it needs to do but doesn't? Areas that need revision, deletion?

3. JSEP is at the point of changing from a pilot project under development by Florida State University to a regular education program managed completely by the Army. From your experience what advice can you offer about the following management areas?

Probe: for each, Is it adequate now? What needs to be done? By whom?

a) Training for new instructors, in-service for experienced ones?

b) Material resources such as Instructor's Manuals, computer hardware, programming to diagnose soldiers' needs, select lessons, report progress? Consumable materials?

c) Keeping curriculum updated, lessons well-written?

d) What do you think JSEP will be used for, or how will it be used, two years from now?

4. Anything you would like to add, any questions? Thanks!

Questions for Training, Duty Supervisors

(Introduction same as for Educational Staff.)

Respondent: _____ Post: _____

Title: _____ Date: _____ Int: _____

1. How familiar are you with JSEP? How has it affected your area of responsibility?

Probe: Refer soldiers? Receive JSEP "graduates?" General working relationship with the Education Center?

2. From your perspective, how well do you think JSEP is working?

Probe: For your needs, what should it do? What does it do? How important are the things JSEP is designed to do?

3. What do you see as JSEP's strengths?

Probe: What it does well? Expected and unexpected pluses? Compared to earlier programs?

4. What do you see as JSEP's weaknesses?

Probe: Areas to be added or deleted? Problems it causes unintentionally?

5. Anything you would like to add, or ask about? Thanks!

Questions for Soldiers

(Introduction same as previous)

Respondent: _____ Post: _____

Rank: _____ Date: _____ Int: _____

1. How long have you been working with JSEP? What do you want to get out of it (SQT score, MOS improvement, etc.)? Have you had any other Army educational programs, like BSEP?

2. From your experience, how does JSEP compare with other classes or study programs you have taken? Do you like working with JSEP? Is it a good way for you to learn?

3. Have you been able to accomplish your learning goals through JSEP-- or do you think you will by the time you finish? Is what you are learning relevant to your job?
4. What are JSEP's strong points? What is most effective, what do you like the most?
5. What are JSEP's weaknesses? Things that need to be changed, added, dropped?
6. Have there been any benefits to you from participating in JSEP? Has it caused you any problems? Give some examples to illustrate.
7. What advice would you give the Army about using JSEP with other soldiers like yourself?
8. Anything you would like to add, or ask about? Thanks!

APPENDIX C

Specific Lesson-Level Performance and Time Data

Appendix C. JSEP Lesson Level Results

The purpose of this section is to present detailed information about the performance of soldiers on JSEP on-line lessons, in terms of mastery rates and the amount of time used to complete the lessons. It is appended to the technical report because the information is expected to be of interest to a limited group of readers.

Lesson Mastery Rates

Table C.1 shows the number of soldiers failing the pretest for each lesson, which is also the number going through the lesson's instructional content. Of that group, the table shows the percent passing the short or long lesson test, or failing the lesson. For example, 30 percent of those attempting lesson 1a failed the pretest. Of these 53 soldiers, 66 percent passed after taking the short lesson, 27 percent after the long lesson, and 8 percent did not pass the lesson. Referring to Table C.1, the following sections discuss soldier performance for each series, beginning with mathematics.

Math lesson performance. The lessons in the Numbering and Counting Series did not appear to be as easy as their names suggested. Only lessons 1a and 1e were passed on the pretest by half or more of the soldiers attempting them. Of soldiers who went through the lessons, 49 percent failed lesson 1c and 64 percent failed lesson 1i.

In the lessons on Linear, Weight and Volume Measures, the pretests were failed for 2b and 2g more frequently than for other lessons. Soldiers were most likely to fail lesson 2g (33%) or 2e (21%). Virtually none of the soldiers passed the pretest for lesson 3c (azimuths and mils) in the series on Degree Measures. However, 75 percent or more of the soldiers taking the lessons in this series passed them.

Soldiers were largely unsuccessful on the pretests for the Time-Telling Measures Series, except for the lesson on estimating seconds, minutes and parts of an hour. One-third of the soldiers failed the lesson on equating Gregorian and Julian dates, while two of the three soldiers who took the lesson on converting to Zulu time failed it.

Table C.1. Soldiers Failing Pretest: Percent Passing or Failing
(On-Line Lessons Only) (N=179)

Lesson	Of Attempting:		Of Failing:*		Pass Long (Pct.)	Not Pass (Pct.)
	Fail Pretest (No.)	(Pct.)	Pass Short (Pct.)	37.4		
<u>Numbering & Counting</u>						
1a. Match name	53	30.3	66.0	26.4	7.5	
1b. Sequence	113	64.9	36.3	37.2	26.5	
1c. Before, between	169	96.6	23.7	27.2	49.1	
1d. Greater/lesser	91	52.3	34.1	37.4	28.6	
1e. Ordinal position	39	22.4	82.1	12.8	5.1	
1f. Place value	89	50.9	92.1	3.4	4.5	
1g. Round whole/decimal	127	73.0	57.5	26.8	15.7	
1h. Count by 1,5,10, etc.	121	70.8	64.5	--	35.5	
1i. Match scale intervals	122	70.9	36.1	--	63.9	
<u>Linear, Weight & Volume Measures</u>						
2a. Linear scale mark	26	15.6	57.7	38.5	3.8	
2b. US & metric measures	87	51.5	88.5	11.5	0.0	
2c. Lengths	24	14.4	91.7	8.3	0.0	
2d. Weight, pressure, torque	6	11.3	83.3	--	16.7	
2e. Volume	67	39.6	79.1	--	20.9	
2f. Non-numeric calibrated	65	38.9	92.3	--	7.7	
2g. Estimate size, distance	132	79.0	53.8	12.9	33.3	
<u>Degree Measures</u>						
3a. Degrees, mils, angles, temp	59	36.0	84.7	13.6	1.7	
3b. Est angle \leq 180 deg	61	37.2	67.2	18.0	14.8	
3c. Interp azimuths, 0-6400 mils	153	94.4	37.5	37.9	24.2	
3d. Interp azimuths, 0-360 deg	76	46.9	73.7	15.8	10.5	
<u>Time-Telling Measures</u>						
4a. Digital, analog, 24 hr	150	88.8	68.7	24.7	6.7	
4b. Clockface direction	84	50.0	91.7	8.3	0.0	
4c. Est secs, mins	32	19.0	75.0	9.4	15.6	
4d. Gregorian & Julian	168	98.8	18.5	48.8	32.7	
4e. Convert hours, 10ths	45	100.0	71.1	--	28.9	
4f. Convert to Zulu	3	100.0	0.0	33.3	66.7	

*Percents based upon number failing pretest.

Table C.1. (Cont.) Soldiers Failing Pretest: Percent Passing or Failing
(On-Line Lessons Only) (N=179)

Lesson		Of Attempting:		Of Failing:*		
		Fail Pretest (No.)	(Pct.)	Pass Short (Pct.)	Pass Long (Pct.)	Not Pass (Pct.)
<u>Gage Measures</u>						
5a. Read gage	134	82.7	84.3	13.4	2.2	
5b. Read read-out	48	29.6	93.8	4.2	2.1	
5c. Read gage, color	30	18.5	96.7	3.3	0.0	
5d. Read scales (+/-)	4	2.5	75.0	25.0	0.0	
5e. Read multiscale	59	36.4	50.8	44.1	5.1	
5f. Match gage to spec	40	24.8	67.5	17.5	15.0	
5g. Read unnumbered/unmarked	6	3.7	66.7	33.3	0.0	
5h. Read fluctuating gage	76	47.2	75.0	13.2	11.8	
5i. Match specs/align	15	9.3	100.0	0.0	0.0	
<u>Spatial</u>						
6a. Ident direct tools move	2	1.3	100.0	0.0	0.0	
6b. Manip to align, etc.	102	66.2	60.8	22.5	16.7	
6c. 2-dimension to spatial	7	4.5	71.4	28.6	0.0	
6d. Symbols to systems	81	52.6	60.5	--	39.5	
<u>Lines</u>						
7a. Ident points, etc.	88	56.1	94.3	5.7	0.0	
7b. Ident vert, horiz, diag	66	42.0	81.8	13.6	4.5	
7c. Ident intersect, diverg	64	40.8	90.6	7.8	1.6	
7d. Superimpose lines	6	100.0	100.0	--	0.0	
<u>Planes</u>						
8a. Match plane shapes	31	19.9	100.0	0.0	0.0	
8b. Ident geometric	0	0.0	0.0	--	0.0	
8c. Apply shape terms	65	41.7	55.4	21.5	23.1	
8d. Match patterns	29	18.6	58.6	20.7	20.7	
8e. Figure orient	15	9.6	80.0	--	20.0	
<u>Angles & Triangles</u>						
9a. Ident angles	136	84.0	70.6	20.6	8.8	
9b. Ident types angles	17	94.4	82.4	--	17.6	
9c. Ident types triangles	5	55.6	100.0	0.0	0.0	
9d. Ident altitudes, bisect	122	75.3	69.7	27.9	2.5	
9e. Name angles	10	58.8	100.0	--	0.0	
<u>Solids</u>						
10a. Match names/figures	139	82.7	75.5	22.3	2.2	

*Percents based upon number failing pretest.

Table C.1. (Cont.) Soldiers Failing Pretest: Percent Passing or Failing
(On-Line Lessons Only) (N=179)

Lesson	Of Attempting:		Of Failing:*		Pass Long (Pct.)	Not Pass (Pct.)
	Fail Pretest (No.)	(Pct.)	Pass Short (Pct.)	Fail Pretest (Pct.)		
<u>Addition & Subtraction</u>						
12a. Whole, no carry	1	0.6	100.0	0.0	0.0	0.0
12b. Whole, carry	17	10.2	88.2	5.9	5.9	5.9
12c. Decimals, carry	31	18.6	74.2	22.6	3.2	3.2
12d. Pos & neg numbers	142	86.6	47.9	38.0	14.1	14.1
12e. 24-hour time	80	48.8	47.5	27.5	25.0	25.0
12f. Increments measuring	43	26.5	72.1	23.3	4.7	4.7
12g. Linear, dry, liquid, deg	49	84.5	53.1	26.5	20.4	20.4
12h. Estimate sum, diff	160	98.8	18.1	22.5	59.4	59.4
<u>Multiplication & Division</u>						
13a. Whole numbers	25	16.3	80.0	20.0	0.0	0.0
13b. Whole & decimal	85	55.2	56.5	29.4	14.1	14.1
13c. Deci, divisor, dividend	104	68.9	29.8	13.5	56.7	56.7
13d. Neg & pos numbers	17	70.8	100.0	0.0	0.0	0.0
13e. Est product, quotient	5	25.0	80.0	0.0	20.0	20.0
<u>Fractions/Decimals</u>						
14a. Est frac length, area, vol	49	32.9	55.1	22.4	22.4	22.4
14b. Reduce	35	23.5	77.1	11.4	11.4	11.4
14c. Convert decs/fracs	8	40.0	50.0	12.5	37.5	37.5
14d. Convert decimals/%'s	88	59.5	89.8	6.8	3.4	3.4
14e. Add, subtract fracs	27	48.2	81.5	14.8	3.7	3.7
14f. Multiply, divide fracs	107	72.3	68.2	27.1	4.7	4.7
14g. Estimate fraction	27	77.1	25.9	33.3	40.7	40.7
<u>Geometry</u>						
15a. Draw plane fig	23	15.8	100.0	--	0.0	0.0
15b. Match figures/names	24	16.4	87.5	8.3	4.2	4.2
15c. Label objects, figures	20	13.7	100.0	--	0.0	0.0
15d. Use protractor	25	17.5	24.0	44.0	32.0	32.0
15f. Area, perimeter rectang	36	97.3	61.1	38.9	0.0	0.0
15g. Radius, area, circum cir	25	89.3	92.0	4.0	4.0	4.0
15h. Measure rectang solids	35	100.0	51.4	31.4	17.1	17.1
15i. Geometric prob formulas	8	50.0	87.5	12.5	0.0	0.0
15j. Oscilloscope readouts	11	100.0	9.1	36.4	54.5	54.5

*Percents based upon number failing pretest.

Table C.1. (Cont.) Soldiers Failing Pretest: Percent Passing or Failing
(On-Line Lessons Only) (N=179)

Lesson	Of Attempting:		Of Failing:*		
	Fail Pretest (No.)	(Pct.)	Pass Short (Pct.)	Pass Long (Pct.)	Not Pass (Pct.)
<u>Combination of Processes</u>					
16a. Locate center of object	0	0.0	0.0	--	0.0
16b. Compute averages	51	35.4	74.5	9.8	15.7
16c. All proc, whole/mixed	19	82.6	31.6	31.6	36.8
16d. All proc, units meas	20	95.2	20.0	35.0	45.0
16e. Info charts, graphs, etc.	5	45.5	80.0	20.0	0.0
16f. Conversion probs	29	70.7	75.9	10.3	13.8
16g. Ratio, proportion probs	98	68.5	71.4	10.2	18.4
16h. All proc, word probs	12	50.0	66.7	25.0	8.3
<u>Graphing in the Coordinate Plane</u>					
17a. Grid coords map	80	53.0	76.3	20.0	3.8
17b. 6-digit coords	33	21.9	78.8	--	21.2
17c. Plot point, dist, dir	0	0.0	0.0	0.0	0.0
<u>Algebra</u>					
18a. Equations, 1 unknown	3	60.0	0.0	0.0	100.0
18b. Equivalent equations	2	100.0	50.0	0.0	50.0
18c. Calculate power, sq root	7	58.3	100.0	0.0	0.0
<u>Vocabulary</u>					
26a. Common words	38	23.8	42.1	59.9	0.0
26b. Aircraft, tank words	1	16.7	100.0	0.0	0.0
26c. Mean from context	11	7.0	36.4	27.3	36.4
26d. Contract, abbrev, acronym	113	72.9	72.6	18.6	8.8
26e. Figurative, idiomatic	30	19.4	56.7	13.3	30.0
26f. Communic, navig words	119	76.3	92.4	--	7.6
26g. Rifle, survival words	106	67.9	88.7	--	11.3
<u>Reference Skills</u>					
27a. Locate documents	1	0.8	100.0	0.0	0.0
27b. Locate & file	5	3.8	80.0	20.0	0.0
27c. Tbl cont, index, gloss	24	18.5	75.0	12.5	12.5
27d. Locate title, page, etc.	6	4.6	100.0	0.0	0.0
27e. Skim, scan for info	108	81.2	51.9	21.3	26.9
27f. Use cross references	40	31.0	62.5	32.5	5.0

*Percents based upon number failing pretest.

Table C.1. (Cont.) Soldiers Failing Pretest: Percent Passing or Failing
(On-Line Lessons Only) (N=179)

Lesson	Of Attempting:		Of Failing:*		Pass Long (Pct.)	Not Pass (Pct.)
	Fail Pretest (No.)	(Pct.)	Pass Short (Pct.)			
<u>Tables/Charts</u>						
28a. Fact from 2-col table	4	2.8	100.0		0.0	0.0
28b. Fact from tbl intersect	1	0.8	100.0	--	0.0	0.0
28c. Complex tbl, cross ref	36	52.2	41.7	33.3	25.0	
28d. Tbls locate malfunction	55	38.5	58.2	27.3	14.5	
<u>Illustrations</u>						
29a. Details from illus	22	16.1	77.3	22.7	0.0	
29b. Details from key, legend	2	1.5	100.0	0.0	0.0	
29c. Use cross-sec view	1	0.7	100.0	0.0	0.0	
29d. 3-D projection	33	24.1	75.8	--	24.2	
29e. Illus to follow direct	1	0.7	100.0	0.0	0.0	
<u>Flow Charts</u>						
30a. Meanings flow cht symbol	135	96.4	99.3	--	0.7	
30b. Flow cht, proced decis	4	50.0	75.0	--	25.0	
30c. Ident organiz members	0	0.0	0.0	--	0.0	
<u>Schematics</u>						
31a. Locate subsys block	26	100.0	61.5	26.9	11.5	
31b. Components, signal path	21	100.0	85.7	14.3	0.0	
31c. Circuit connects schema	12	66.7	66.7	--	33.3	
31d. Faulty compon/trblshoot	0	0.0	0.0	0.0	0.0	
31e. Symbol: comp, signal path	1	16.7	100.0	0.0	0.0	
<u>Forms</u>						
32a. Locate block for info	1	0.8	100.0	0.0	0.0	
32b. Transfer data	1	0.8	100.0	0.0	0.0	
32c. Enter info on form	29	22.5	58.6	10.3	31.0	
32e. Use form to find info	1	0.8	100.0	0.0	0.0	
<u>Outlining (Topic or Sentence)</u>						
34a. Ident main idea	5	100.0	20.0	--	80.0	
34b. Titles for outline	0	0.0	0.0	--	0.0	
34c. Select details	0	0.0	0.0	--	0.0	
34d. Label topics	121	92.4	50.4	--	49.6	

*Percents based upon number failing pretest.

Table C.1. (Cont.) Soldiers Failing Pretest: Percent Passing or Failing
(On-Line Lessons Only) (N=179)

Lesson	Of Attempting: Fail Pretest (No.)	Of Attempting: Fail Pretest (Pct.)	Of Failing:*		
			Pass Short (Pct.)	Pass Long (Pct.)	Not Pass (Pct.)
<u>Editing</u>					
36a. Spell common words	19	40.4	84.2	10.5	5.3
36b. Spell task words	8	18.2	50.0	50.0	0.0
36c. Capitalization	33	94.3	36.4	18.2	45.5
36d. Correct misspelling	6	21.4	66.7	33.3	0.0
36e. Punctuation	34	97.1	26.5	17.6	55.9
36f. Grammar rules	15	42.9	93.3	6.7	0.0
36g. Rewrite paragraph	2	66.7	100.0	--	0.0
36h. Appraise & adjust	10	35.7	70.0	--	30.0
<u>Precautions</u>					
40a. Knowledge prevent injury	0	0.0	0.0	--	0.0
40b. Safety/security probs	23	17.3	91.3	--	8.7
40c. Emergency action	75	55.6	81.3	--	18.7
<u>Recognition</u>					
41a. Label objects	2	1.5	100.0	0.0	0.0
41b. Hand & arm signals	114	87.7	86.8	12.3	0.9
41c. Equip damage, defects	31	24.0	93.5	6.5	0.0
41d. Move, aline, connect	12	9.3	83.3	--	16.7
41e. Objs size, shape, etc.	2	1.5	100.0	0.0	0.0
41g. Choose action	35	27.3	51.4	--	48.6
41h. Use symbols & codes	11	8.6	72.7	18.2	9.1

*Percent based upon number failing pretest.

Gage Measures lessons were generally easier. Although 83 percent who attempted lesson 5a on reading and interpreting gages failed the pretest, more than half passed the pretests on each of the remaining lessons in the series. Relatively few soldiers failed any of these lessons.

Results were mixed for the **Spatial** lessons. Many failed the pretest on manipulating objects to align them (66%) or relating symbols to systems (53%). Some 40 percent did not pass this latter lesson.

Most of those needing instruction on the lessons in the **Lines** series were successful after the short lesson. This was not true in the series on **Planes**. More than one out of every five who required instruction in lessons 8c, 8d, or 8e failed the lesson. Lessons on **Angles and Triangles** generally found soldiers failing the pretests, although only two lessons (Identify Angles and Identify Altitudes and Bisectors) were attempted by as many as 100 people. Most, however, were able to master the content after the short lesson.

About 83 percent of those attempting the single lesson on **Solids** failed the pretest. Of that group, three-fourths passed the test after the short lesson.

In the series on **Addition and Subtraction**, soldiers were most likely to require instruction on positive and negative numbers; performing functions with linear, dry, liquid, and degree measures; and estimating the sum or difference. They were most likely to remain unsuccessful after instruction in the lessons on estimating the sum or difference; 24-hour time; and linear, dry, liquid and degree measures.

For the **Multiplication and Division Series**, initial difficulties were greatest with negative and positive numbers (71 percent failed the pretest); problems with decimals in the divisor or dividend (69%); and working with whole and decimal numbers (55%). More than half of those who completed the lesson on decimals in the divisor and dividend failed it.

The series on **Fractions and Decimals** was also difficult. More than half of the soldiers attempting the pretest failed it in lessons on converting decimals and percents to fractions, multiplying and dividing fractions, and estimating sum, products and quotients. More than a third of those taking the lessons on converting decimals to fractions,

multiplying and dividing fractions, and estimating sum, product and quotient could not pass the test after completing both the short and long lessons.

In the **Geometry** series soldiers appeared familiar with geometric shapes and their names but not with the processes of computing areas. Fewer than 40 soldiers attempted any of the lessons 15f through 15j. Among this small group, almost all failed the pretest but passed the lesson after instruction. The exception was the lesson on oscilloscope readings, in which six of the 11 attempting it were not successful.

Combinations of Processes were also relatively difficult. Only two of the seven lessons addressed by soldiers in this series were passed on the pretest by as many as half of the students. Seven of the 19 (37%) taking the lesson on using all processes with whole and mixed numbers failed it; this was true for nine of the 20 who took the lesson on using all processes with units of measurement. On the other hand, success rates were high for the lessons on using information from charts and graphs, and on using all processes with word problems.

Only two lessons from the series on **Graphing in the Coordinate Plane** were attempted by soldiers in this evaluation. More than half failed the pretest on identifying grid coordinates, but almost all eventually succeeded with the lesson. Only about one in five failed the pretest on six-digit coordinates and map line intersections, but of these 21 percent again failed to pass the test after instruction.

The **Algebra** lessons were attempted by few soldiers. Those on deriving equations were quite difficult, but the lesson on using a calculator to find power and square root was successful for all who failed the pretest. None of the **Trigonometry** lessons was used.

Verbal lesson performance. The difficulty and success rates in the **Vocabulary** series varied from lesson to lesson. Soldiers were most likely to need instruction in lessons on the subjects of contractions, abbreviations, and acronyms; communication and navigation words; and rifle or survival words. Only small numbers failed the pretests for the lessons on identifying meaning from context and understanding the meaning of figurative or idiomatic terms, but of this group about three-tenths did not pass the test after instruction. **Reference Skills** appeared easy except for the lesson on skimming and

scanning, in which 81 percent failed the pretest. Of those taking that lesson, 27 percent failed the test again after completing both the short and long lesson instruction.

Soldiers typically passed the pretests in **Tables and Charts** except for the lesson on using complex tables and cross-references. Nine of the 36 needing this lesson remained unsuccessful after completing the instruction. Illustrations also appeared to hold little difficulty. More than 75 percent of the soldiers attempting the lessons in this series passed the pretest. Among soldiers taking the lessons, the only failures occurred in the lesson on using three-dimensional projection.

Some of the content in the series on **Flow Charts** and the one on **Schematics** appeared to be initially unfamiliar. Almost all soldiers failed the pretest, but passed the posttest, in the lessons on identifying the meaning of flow chart symbols; identifying and locating subsystems, and so forth; and identifying components and signal paths. Several still had problems after completing the lessons on using flow charts for procedural decisions or tracing circuit connections in a schematic.

Very few soldiers failed the pretest for any of the lessons in the **Forms** series. Of the 30 percent who required instruction in the lesson on entering selected information onto a form, 31 percent were not successful.

Two of the lessons in the series on **Outlining a Topic or Sentence** were attempted by any soldier. All of the five who took the pretest on identifying the main idea failed it; four of them failed again after instruction. Some 92 percent failed the pretest on using numbers and letters to label topics, and half of this group failed the test following the lesson.

Not all of the lessons in the series on **Editing** were this difficult; in only two, identifying words needing capitalization and applying punctuation rules, did appreciable numbers fail the test after instruction. Two-thirds or more, however, who took the pretest failed it for the lessons on capitalization, punctuation, and rewriting a paragraph.

Soldiers generally knew the content of the lessons in the series on **Precautions**, or mastered it after instruction. In the series on **Recognition**, 88 percent of those taking the pretest for the lesson on using and interpreting hand and arm signals required

instruction; virtually all passed the posttest. The one lesson in the series that remained difficult was that on choosing an action by using sight, hearing, and touch. Of the 35 who failed the pretest, almost half were unsuccessful following instruction.

Time to Complete JSEP

Table C.2 separates the soldiers attempting each on-line lesson into several groups: those taking only the pretest (passing it and exempted from the lesson); those taking only the short lesson (passing it or failing it with no long lesson available); and those taking the long lesson (passing or failing). Paper lessons were excluded because no accurate time figures were recorded for these. For each group the table reports the median minutes to complete the lesson. The median is the point separating the group into two halves (50 percent score above the median and 50 percent below it) and it was selected for this report because it is less sensitive to extreme scores than the mean. For example, half of all soldiers took fewer than 16 minutes (the median time) to complete Lesson 1a. But as we saw in the body of the report, one soldier required 221 minutes. If that figure had been averaged in to produce the mean time in minutes, it would have given an unrealistic picture of how long the typical soldier spent on Lesson 1a. Table C.2 also lists the median time to complete for soldiers passing the pretest (13 minutes for Lesson 1a), those taking only the pretest and the short lesson (for 1a, 62 minutes), and those requiring the pretest, short lesson, and long lesson (146 minutes).

The most obvious finding from Table C.1 is that there was a great deal of variation both within and between lessons. JSEP appears truly to have been used as a self-paced program. There was so much difference in the median amount of time required to complete lessons (for example, contrast Lessons 1c and 1e) that it does not make much sense to calculate the average time in JSEP when soldiers may have different prescriptions of lessons. Again, there was so much variation in time between soldiers who passed the lessons at different stages that it is difficult to say how long it took soldiers to complete any given lesson. A soldier who passed all of the pretests in Numbering and Counting could have completed that series in an hour and a half. A soldier who needed to work through each short lesson in that series would have required about seven hours to do so.

Table C.2. Median Number of Minutes in Each Prerequisite Competency (N=179)

Lesson	All Soldiers	Soldiers: Passing Pretest	Taking Short Only	Taking Long
<u>Numbering & Counting</u>				
1a. Match name	16	13	62	146
1b. Sequence	55	15	49	110
1c. Before, between	175	14	75	202
1d. Greater/lesser	26	5	33	150
1e. Ordinal position	9	8	29	70
1f. Place value	15	7	22	75
1g. Round whole/decimal	46	7	45	102
1h. Count by 1,5,10, etc.	30	9	34	--
1i. Match scale intervals	63	14	76	--
<u>Linear, Weight & Volume</u>				
<u>Measures</u>				
2a. Linear scale mark	7	7	24	62
2b. US & metric measures	20	5	34	90
2c. Lengths	8	7	21	108
2d. Weight, pressure, torque	6	6	25	--
2e. Volume	17	11	46	--
2f. Non-numeric calibrated	6	5	16	--
2g. Estimate size, distance	45	8	36	68
<u>Degree Measures</u>				
3a. Degrees, mils, angles, temp	13	10	43	119
3b. Est angle \leq 180 deg	8	6	25	92
3c. Interp azimuths, 0-6400 mils	74	8	42	97
3d. Interp azimuths, 0-360 deg	8	5	27	70
<u>Time-Telling Measures</u>				
4a. Digital, analog, 24 hr	32	8	29	88
4b. Clockface direction	11	5	16	32
4c. Est secs, mins	6	6	19	48
4d. Gregorian & Julian	140	25	67	154
4e. Convert hours, 10ths	30	--	30	--
4f. Convert to Zulu	208	--	--	208

Table C.2. (Cont.) Median Number of Minutes in Each Prerequisite Competency (N=179)

Lesson	All Soldiers	Soldiers: Passing Pretest	Taking Short Only	Taking Long
Gage Measures				
5a. Read gage	31	10	31	88
5b. Read read-out	6	5	14	42
5c. Read gage, color	6	6	16	24
5d. Read scales (+/-)	5	5	18	51
5e. Read multiscale	11	9	31	77
5f. Match gage to spec	10	9	25	69
5g. Read unnumbered/unmarked	4	4	19	29
5h. Read fluctuating gage	24	14	34	89
5i. Match specs/aline	9	9	33	--
Spatial				
6a. Ident direct tools move	7	7	41	--
6b. Manip to aline, etc.	29	15	31	97
6c. 2-dimension to spatial	9	8	30	154
6d. Symbols to systems	16	8	23	--
Lines				
7a. Ident points, etc.	14	6	18	40
7b. Ident vert, horiz, diag	11	7	25	62
7c. Ident intersect, diverg	5	3	16	28
7d. Superimpose lines	17	--	17	--
Planes				
8a. Match plane shapes	5	4	16	--
8b. Ident geometric	6	6	--	--
8c. Apply shape terms	11	7	17	61
8d. Match patterns	5	5	15	46
8e. Figure orient	4	4	14	--
Angles & Triangles				
9a. Ident angles	45	13	44	99
9b. Ident types angles	37	12	38	--
9c. Ident types triangles	19	5	23	--
9d. Ident altitudes, bisect	40	11	41	83
9e. Name angles	21	8	30	--
Solids				
10a. Match names/figures	14	4	14	41

Table C.2. (Cont.) Median Number of Minutes in Each Prerequisite Competency (N=179)

Lesson	All Soldiers	Soldiers: Passing Pretest	Taking Short Only	Taking Long
Addition & Subtraction				
12a. Whole, no carry	10	10	53	--
12b. Whole, carry	7	7	28	164
12c. Decimals, carry	8	8	29	97
12d. Pos & neg numbers	56	7	31	154
12e. 24-hour time	34	14	49	190
12f. Increments measuring	15	13	47	121
12g. Linear, dry, liquid, deg	85	23	68	175
12h. Estimate sum, diff	86	15	33	92
Multiplication & Division				
13a. Whole numbers	23	21	72	201
13b. Whole & decimal	39	16	55	142
13c. Deci, divisor, dividend	71	18	51	120
13d. Neg & pos numbers	17	8	18	--
13e. Est product, quotient	9	8	30	87
Fractions/Decimals				
14a. Est frac length, area, vol	8	7	24	110
14b. Reduce	11	9	34	147
14c. Convert decs/fracs	21	15	53	100
14d. Convert decimals/%'s	34	14	47	162
14e. Add, subtract fracs	18	10	31	147
14f. Multiply, divide fracs	56	17	59	162
14g. Estimate fraction	71	7	24	102
Geometry				
15a. Draw plane fig	4	4	13	--
15b. Match figures/names	6	5	21	55
15c. Label objects, figures	6	6	20	--
15d. Use protractor	4	4	31	88
15f. Area, perimeter rectang	23	4	17	38
15g. Radius, area, circum cir	29	18	29	119
15h. Measure rectang solids	48	--	28	63
15i. Geometric prob formulas	34	14	51	222
15j. Oscilloscope readouts	121	--	60	124

Table C.2. (Cont.) Median Number of Minutes in Each Prerequisite Competency (N=179)

Lesson	All Soldiers	Soldiers: Passing Pretest	Taking Short Only	Taking Long
<u>Combination of Processes</u>				
16a. Locate center of object	3	3	--	--
16b. Compute averages	16	12	35	70
16c. All proc, whole/mixed	173	11	39	232
16d. All proc, units meas	75	11	42	82
16e. Info charts, graphs, etc.	20	13	40	97
16f. Conversion probs	29	15	31	102
16g. Ratio, proportion probs	14	5	16	53
16h. All proc, word probs	18	8	21	47
<u>Graphing in the Coordinate Plane</u>				
17a. Grid coords map	26	11	35	125
17b. 6-digit coords	9	9	26	--
17c. Plot point, dist, dir	6	6	--	--
<u>Algebra</u>				
18a. Equations, 1 unknown	151	25	--	156
18b. Equivalent equations	68	--	25	110
18c. Calculate power, sq root	23	13	30	--
<u>Vocabulary</u>				
26a. Common words	14	13	36	251
26b. Aircraft, tank words	7	7	51	--
26c. Mean from context	6	5	23	150
26d. Contract, abbrev, acronym	30	8	30	126
26e. Figurative, idiomatic	7	6	23	88
26f. Communic, navig words	44	7	49	--
26g. Rifle, survival words	22	6	25	--
<u>Reference Skills</u>				
27a. Locate documents	4	4	22	--
27b. Locate & file	6	6	20	38
27c. Tbl cont, index, gloss	5	5	41	114
27d. Locate title, page, etc.	13	13	36	--
27e. Skim, scan for info	18	6	15	51
27f. Use cross references	13	11	35	76
<u>Tables/Charts</u>				
28a. Fact from 2-col table	4	4	15	--
28b. Fact from tbl intersect	4	4	25	--
28c. Complex tbl, cross ref	36	19	54	94
28d. Tbls locate malfunction	15	11	27	116

Table C.2. (Cont.) Median Number of Minutes in Each Prerequisite Competency (N=179)

Lesson	All Soldiers	Soldiers:			Taking Long
		Passing Pretest	Taking Short Only		
<u>Illustrations</u>					
29a. Details from illus	10	10	29		73
29b. Details from key, legend	6	6	22		--
29c. Use cross-sec view	6	6	29		--
29d. 3-D projection	4	4	17		--
29e. Illus to follow direct	7	7	23		--
<u>Flow Charts</u>					
30a. Meanings flow cht symbol	19	3	19		--
30b. Flow cht, proced decis	15	7	30		--
30c. Ident organiz members	6	6	--		--
<u>Schematics</u>					
31a. Locate subsys block	31	--	22		47
31b. Components, signal path	53	--	52		125
31c. Circuit connects schema	18	6	25		--
31d. Faulty compon/trblshoot	7	7	--		--
31e. Symbol: comp, signal path	6	5	23		--
<u>Forms</u>					
32a. Locate block for info	4	4	15		--
32b. Transfer data	8	8	18		--
32c. Enter info on form	19	18	44		134
32e. Use form to find info	6	6	21		--
<u>Outlining (Topic or Sentence)</u>					
34a. Ident main idea	23	--	23		--
34b. Titles for outline	7	7	--		--
34c. Select details	10	10	--		--
34d. Label topics	89	48	90		--
<u>Editing</u>					
36a. Spell common words	22	14	63		121
36b. Spell task words	14	13	51		235
36c. Capitalization	113	16	36		152
36d. Correct misspelling	13	12	54		108
36e. Punctuation	213	249	113		249
36f. Grammar rules	15	10	54		160
36g. Rewrite paragraph	46	8	48		--
36h. Appraise & adjust	12	8	38		--

Table C.2. (Cont.) Median Number of Minutes in Each Prerequisite Competency (N=179)

Lesson	All Soldiers	Soldiers:		
		Passing Pretest	Taking Short Only	Taking Long
<u>Precautions</u>				
40a. Knowledge prevent injury	5	5	--	--
40b. Safety/security probs	6	5	19	--
40c. Emergency action	22	7	28	--
<u>Recognition</u>				
41a. Label objects	4	4	17	--
41b. Hand & arm signals	20	5	20	97
41c. Equip damage, defects	12	10	33	120
41d. Move, aline, connect	3	3	11	--
41e. Objs size, shape, etc.	4	4	20	--
41g. Choose action	5	5	17	--
41h. Use symbols & codes	10	10	26	61

The second conclusion is self-evident: the lesson pretest saved instructional time. Soldiers who passed the pretest did so quickly. Part of the longer times shown for soldiers who took the short lessons or the short and long lessons may reflect slower work, but part is attributable to the simple mechanics of going through the instructional content.

Instructionally, the time values agree with the lesson test performance reported in Table C.1. The more difficult a lesson was to pass, the longer it took to complete.

APPENDIX D

Soldiers' Responses and Comments--

Post-JSEP Attitude Survey

Table D.1. Characteristics of Soldiers
Completing JSEP (N=175)

<u>Item</u>	<u>No.</u>	<u>Pct.</u>
Soldier Characteristic		
Rank		
E1	1	0.7
E2	10	6.7
E3	24	16.0
E4	76	50.7
E5	28	18.7
E6	11	7.3
Other, not given	25	--
Career Mgt. Field (10 or more)		
Combat Engineering	10	5.7
Field Artillery	20	11.4
Signal Operations	15	8.6
Mechanical Maintenance	19	10.9
Administration	14	8.0
Supply & Service	22	12.6
Transportation	12	6.9
Fewer than 10 in CMF	63	36.0
Years in Duty MOS		
Less than 1	29	16.6
1	46	26.3
2-3	55	31.4
4 or more	45	25.7
Like Duty MOS?		
Yes, want to keep	100	57.1
No, want to change	67	38.3
No response	8	4.6
Native Language		
English	163	93.1
Other	12	6.9

Table D.1., cont.

Florida State University Questions	Percent Responding:				
	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
Easy to learn to use computer	61.1	33.7	2.3	2.9	--
Using computer 3 or 4 hours too long	8.0	17.7	13.1	47.4	13.7
Should use written assignments with computer	15.4	32.6	17.7	20.6	12.6
Lessons will help me understand publications I use	20.6	49.1	18.3	9.7	1.7
Skills learned in JSEP will help me advance in grade	18.3	33.1	30.9	10.9	6.3
Instructor should teach lessons, not computer	5.7	10.9	28.0	34.9	19.4
Willing to take more JSEP on duty	40.6	31.4	14.3	9.1	4.0
Willing to take more JSEP off duty	28.0	26.3	26.3	9.1	9.7
My commander would release me from duty for JSEP	23.4	34.3	31.4	5.7	4.0
JSEP should be offered by Education Center	57.1	32.0	9.1	1.7	--

Table D.1., cont.

<u>Item</u>	<u>No.</u>	<u>Pct.</u>
Enrollment Factor		
Why Enrolled*		
Commander recommended	31	17.7
Education Center recommended	46	26.3
I wanted to	83	47.4
Other reason	41	23.4
How Long Enrolled		
Under 4 weeks	46	26.3
4 to 6 weeks	104	59.4
More than 6 weeks	22	12.6
No response	3	1.7
Completed Prescription		
Yes	118	67.4
No	42	24.0
Not sure	9	5.1
No response	6	3.4
Enrolled Hours Per Day		
Under 4 hours	18	10.3
4 hours	138	78.9
More than 4 hours	19	10.9
Enrolled Days Per Week		
Under 5 days	13	7.4
5 days	151	86.3
More than 5 days	9	5.1
No response	2	1.1
Primary Purpose Enrolled		
Improve GT	150	85.7
Pass SQT	1	0.6
Improve MOS skills	1	0.6
Qualify for new MOS	1	0.6
Improve math skills	1	0.6
Improve verbal skills	1	0.6
Prepare for GED	--	--
Don't know/not sure	--	--
Other	--	--
No response	20	11.4

*Could check more than one answer.

Table D.1., cont.

<u>Item</u>	<u>No.</u>	<u>Pct.</u>
Effect of JSEP		
Effect on Motivation to Learn		
Became more motivated	135	77.1
Became less motivated	4	2.3
No effect on motivation	9	5.1
Don't know what effect was	25	14.3
No response	2	1.1
How Much Did You Learn From JSEP?		
I learned a lot	94	53.7
I learned some	73	41.7
I didn't learn much	4	2.3
I didn't learn anything	--	--
Not sure/don't know	2	1.1
No response	2	1.1
Helped the Most With*		
Learning to use computer	56	32.0
Learn/improve skills for job	36	20.6
Improve math skills	122	69.7
Improve reading, verbal skills	64	36.6
Didn't help anything much	5	2.9
Other answer	11	6.3
Effect on How Well You Do Your Job		
Positive--learned much of use to job	43	24.6
Average--helped a little	73	41.7
Negative--bad effect on job	3	1.7
No effect on job performance	47	27.9
Not sure/don't know	5	2.9
No response	4	2.3
Helped or Caused Problems in These*		
Taught what I need for job	21	12.0
Increased self-confidence	79	45.1
Commander didn't like my time in JSEP	7	4.0
Motivated me to learn and improve skills	100	57.1
Taught a lot about Army	31	17.7
Held me back from unit	7	4.0
Helped me improve GT score	59	33.7
Helped me learn new MOS	9	5.1
Gave me break from routine	75	42.9
No major benefits	14	8.0
No major problems	55	31.4

*Could check more than one answer.

Table D.1., cont.

Item

Attitude Toward JSEP

What Did You Like About JSEP?*

Chance to use computer
Way JSEP explained things
Way JSEP drew pictures and diagrams
Way computer responded to answers
Things I learned in lessons
Chance to learn and study by myself
Nothing in particular
Other

What Did You Dislike About JSEP?*

Way JSEP explained things
Way computer responded to answers
Way JSEP drew pictures and diagrams
Way tests were given
Errors in JSEP lessons
Problems with computer
Nothing in particular
Other

How Did You Feel About JSEP at First?

Liked it a lot
Liked it a little
Didn't like it very much
Didn't like it at all
No response

How Do You Feel About JSEP Now?

Like it a lot
Like it a little
Don't like it very much
Don't like it at all
No response

Did Any Thing Change Your Feelings?

Yes
No
No response

How Would You Recommend JSEP be Used?

Replace all BSEP with JSEP
Use JSEP as part of BSEP
Don't use JSEP at all
Not sure or don't know
Other
No response

*Could check more than one answer.

Table D.1., cont.

Item	Very Useful No.	Very Useful Pct.	Somewhat Useful No.	Somewhat Useful Pct.	Not Useful No.	Not Useful Pct.	Don't Know No Response No.	Don't Know No Response Pct.
Ratings of Elements								
Test before lesson	111	63.4	48	27.4	7	4.0	9	5.1
Short review lesson	118	67.4	49	28.0	2	1.1	6	3.4
Test after short lesson	126	72.0	38	21.7	4	2.3	7	4.0
Long lesson	97	55.4	55	31.4	12	6.9	11	6.3
Test after long lesson	109	62.3	49	28.0	7	4.0	10	5.7
Usefulness of Learning** Strategy Lessons								
	Useful No.	Useful Pct.	Not Useful No.	Not Useful Pct.	Don't Remember No.	Don't Remember Pct.	Not Taken/ No Response No.	Not Taken/ No Response Pct.
Time management	136	77.7	13	7.4	16	9.1	10	5.7
Test taking	155	88.6	8	4.6	3	1.7	9	5.1
Motivational skills	114	65.1	23	13.1	22	12.6	17	9.7
Reading comprehension	132	75.4	8	4.6	14	8.0	21	12.0
Problem solving	145	82.9	9	5.1	10	5.7	11	6.3
Lessons Assigned Were:*								
	No.	Pct.						
Too easy	13	7.4						
Just the ones I needed	92	52.6						
Wanted to change but couldn't	21	12.0						
Most were not needed or wanted	42	24.0						
Other	28	16.0						
Would You Like to Change Way JSEP is set up?								
Yes	65	37.1						
No	106	60.6						
No response	4	2.3						

**See text; question appears to have been misunderstood.

*Could check more than one response.

Table D.1., cont.

Item	Percent Rating:			Needs Improvement	No Response
	Excellent	Good	Poor		
Element					
Pictures on screen	43.4	47.4	6.3	1.7	1.1
Explanation of ideas	45.1	48.0	4.6	1.1	1.1
Examples, practice questions	48.0	44.0	6.9	0.6	0.6
Computer response to practice questions	37.1	42.9	17.1	2.3	0.6
Level of reading difficulty	24.6	61.7	9.7	2.3	1.7
Way tests are scored	25.1	54.9	14.3	4.0	1.7
Number of tests required	30.3	57.7	9.7	1.1	1.1
Computer set-up	38.9	49.1	9.1	0.6	2.3
Controlling screen, moving through lessons	42.3	44.6	10.9	1.7	0.6
Choice of lessons assigned	33.7	45.1	16.6	4.0	0.6
Length of lessons	26.3	56.6	12.0	2.9	2.3
Amount of time in JSEP	26.3	57.7	12.0	2.9	1.1
Number of lessons assigned	29.1	55.4	11.4	2.9	1.1
Help from instructor	66.3	30.3	1.7	0.6	1.1
Military content of lessons	29.7	56.6	6.9	4.6	2.3
Civilian content of lessons	24.6	57.7	12.6	2.3	2.9

Table D.1., cont.

<u>Item</u>	<u>No.</u>	<u>Pct.</u>
Difficulty or Problems		
In general, how difficult were lessons?		
Too easy	6	3.4
Rather easy	30	17.1
Just right	107	61.1
Rather difficult	26	14.9
Too difficult	--	--
No response	6	3.4
What was most difficult part of JSEP?*		
Using computer	4	2.3
Reading lesson material	8	4.6
Understanding diagrams	12	6.9
Keeping my concentration	67	38.3
Test questions	11	6.3
Nothing was difficult	80	45.7
Other	16	9.1
Did you have any computer problems?*		
Screen became messed up	25	14.3
Got stuck in a lesson	50	28.6
It marked correct answer wrong	74	42.3
Did not respond to commands	31	17.7
Computer was broken	9	5.1
Not enough computers	4	2.3
Didn't have any problems	55	31.4
How often did you go to instructor for help?		
More than 3 times per session	5	2.9
One to 3 times per session	29	16.6
Once per session	28	16.0
Less than once per session	53	30.3
Rarely or never	57	32.6
No response	3	1.7
What kind of problems did you ask about?*		
Problems with computer	65	37.1
Problems understanding lessons	66	37.7
Problems with practice questions	35	20.0
Problems with tests	30	17.1
Rarely or never asked about problems	55	31.4
Other	7	4.0

*Could check more than one response.

Table D.1., cont.

<u>Item</u>	<u>No.</u>	<u>Pct.</u>
Difficulty or Problems		
How did instructor help?*		
Told me to keep trying or review	14	8.0
Explained in a different way	96	54.9
Adjusted computer	54	30.9
Gave other materials to read	16	9.1
Did or could not help	1	0.6
Rarely or never asked for help	49	28.0
Other	8	4.6

*Could check more than one response.

Table D.1., cont.

Item	Yes		No		Don't Know/ No Response	
	No.	Pct.	No.	Pct.	No.	Pct.
What was best about lessons?*						
Explain concepts clearly	98	56.0				
Show how to do things step by step	129	73.7				
Illustrate in practical, useful ways	93	53.1				
Give opportunity to practice	94	53.7				
Teach things never had chance to learn	59	33.7				
Nothing was very helpful	4	2.3				
Other	5	2.9				
Did JSEP help you:						
Learn at own pace	152	86.9	15	8.6	8	4.6
Practice until you got it right	155	88.6	16	9.1	4	2.3
Be motivated to learn	121	69.1	36	20.6	18	10.3
Relax, not worry about mistake	103	58.9	62	35.4	10	5.7
Discover how to do things on own	152	86.9	18	10.3	5	2.9
See material presented step by step	155	88.6	13	7.4	7	4.0
Anything frustrate you or prevent learning?						
Illustrations took too long	54	30.9				
Lessons were boring	17	9.7				
Lessons repeated things too much	31	17.7				
Couldn't work with other soldiers	3	1.7				
I didn't make enough effort	3	1.7				
Lessons were confusing	8	4.6				
Lessons not ones I needed or wanted	24	13.7				
Didn't like touching screen	20	11.4				
Couldn't see what I got wrong on tests	111	63.4				
Didn't like how computer addressed me	4	2.3				
Computer malfunctioned too often	17	9.7				
Didn't have any trouble learning	42	24.0				
Other	15	8.6				
How do you usually learn best?						
Computer or teacher - no difference	14	8.0				
Computer, in general	29	16.6				
Teacher, in general	27	15.4				
Depends - sometimes prefer one or other	95	54.3				
Not sure	2	1.1				
No response	8	4.6				

*Could check more than one response.

SOLDIER'S COMMENTS: POST-JSEP ATTITUDE SURVEY

3. How do you feel about your current MOS assignment?

Not MOS related.

Lack of field exercise.

I like my job but I want to do something different.

It's not challenging enough for me.

I like to get into what I do best.

I did not get the job I wanted when I came in.

I don't even work with my MOS.

Because I don't like it anymore.

There isn't any school associated with this MOS except

AIT. There's only two [places] that you can go to--
state or overseas. Only one place stateside, Ft.

Sill.

Too many hours and less harassment.

a) Don't like field duty; b) This MOS not that useful
in civilian life; c) Like to have a technology-
related MOS.

When I joined the Army they didn't explain to me what my
job was.

I want to raise my GT score.

No civilian occupation.

It is not what I thought it would be.

I want to be a welder or a mechanic.

Too many YEMT.

It's for people with no future!!!

Because of the job relatives (sic) or the civilian
techniques.

I want something different.

This MOS isn't challenging enough for me.

It's not the job I wanted.

I feel I could do something better.

I'm beginning to dislike working in it very much; it
don't feel like a career anymore.

I want to go to school and go through ROTC then proceed
to law school.

It is boring and has no challenge.

Other; I like this job, but I want to advance as a
paramedic.

I want to become a law enforcement officer.

But there is a cut-off on promotion and advance school
is needed to further my career.

I like my primary MOS better and know the job well.

I want to go into accounting.

It is no challenge for the civilian economy.

Too stressful; too hard to get promotions.

I wanted 95B before I took 11B. I'm trying for 95B.
The promotions are too slow.
I don't feel that my time in garrison has a useful
purpose.
Too much dumb stuff is happening, everything at the last
minute.

7. Why did you enroll in JSEP?

Wanted to raise my GT scores.
To raise my GT scores.
To bring my GT score up.
I wanted to refresh myself.
To help my GT score.
To improve my skill and GT score.
To bring my GT score up.
To raise my GT score.
To raise my GT scores.
I needed to raise my GT score.
I want to improve my GT score.
Help for promotion (looks good on record).
To improve common skill.
I wanted to improve my skill and GT scores.
Improve GT for OCS.
To raise my GT score.
To improve my GT score.
I enroll in the program because I wanted to raise my GT
score.
Improvement of my GT score for LPN school.
To raise my scores.
To better my GT score.
Raise GT score.
To help myself.
Improve GT scores.
To improve my GT score.

8. What was your primary purpose in taking JSEP?

I wanted to improve GT scores.
I want to change my MOS to a MOS without a security
clearance.
To improve my overall skills.
I thought I would get promotion points.

10. Did taking JSEP have any effect on your motivation to learn or to improve your skills?

But the machine worked too slow, so it kind of brought my motivation down at times.
It's a very educational program.

11. In general, how difficult were the JSEP lessons?

Some were easy, some were difficult and it made you stop and think. Some of the questions were from years ago and were hard to answer the questions before the lesson.
They just make a person think harder. It's not at all easy.

12. What did you like about JSEP?

To learn at my own pace.
A chance to learn new things.
To learn about my weak points, to improve.
How important it was to pay attention to instructions.
When I answered something wrong, it explains to me why it was wrong then how I have to go about correcting it.
Just the way it was set up.
The consideration the instructor has for the students.
The ability to work at my own pace.
I don't really know except it made me aware of my weaknesses.
It gave me insight on my weaknesses after being out of school.
This system should be used everywhere.
A chance to refresh my skills.
It spends too much time drawing and it's very slow at times responding to the answer.
When taking a test you could not go back to change your answer, only if you missed the key and hit the wrong key.
The long lesson it put you into after you fail the test the second time.
After you take the first posttest before a lesson, you should be able to say "Yes" or "No" to taking the test over before getting into the lesson. Sometimes you missed it by one and know the one you missed.
Some of the material was too long and drawn out, and too much detail.

At times the explanations were unclear as for their answers.

Short lessons.

In a lot of pretest and tests I would abbreviate either too many or not enough answers.

I didn't like not knowing what I missed on each test.

Sometimes the computer doesn't explain how to answer some of its questions; your answer may be correct but the computer says it's wrong.

The pictures and diagrams took too long to draw.

Not knowing exactly what questions were wrong on my test.

Not being able to review right or wrong test answers.

Sometimes if you had the correct answer it would tell you you were wrong and type the same answer you had written in the first place where you left off. You had to start that specific section over again. It wasted precious time.

When you sign off it doesn't take you back exactly where you stopped.

Small problems, nothing too serious to handle.

It doesn't explain or let you know where you made a mistake.

15. What did JSEP help you with the most?

JSEP gave me lots of encouragement to hang in there to finish.

Learning how to learn; I been away from school for 5 years.

It helped me in my math but I still haven't got it quite right.

Helped me all around.

Helped me see what understanding the problem does for me. Thinking.

16. What was best about the way JSEP lessons work?

To realize that education is important.

Sometimes they would go into directions too deep; I would overlook ones I should have.

It was a good refresher.

Some things I've never seen before JSEP.

17. Was there anything about JSEP that frustrated you or prevented you from learning?

I lost interest with all the extra drawing they do. At times not enough time given to solve problems; therefore many mistakes were made.

Lessons were too long.

Some of the material was disgusting, too repetitious, and ridiculous.

I think a person who takes a test should be allowed to see what he missed.

Taking a test and not putting in the right word or abbreviation on pretest. It would confuse me after I started a lesson because I answered the pretest different.

Paper lessons. Going from computer to paper didn't help my concentration.

Some of the material wasn't useful to me and my primary MOS.

Sometimes it's hard to touch it exactly; you should be able to use the tab area more.

Like it was said before, I really wasn't thinking about what I was doing.

18. What was the most difficult part about JSEP for you?

The ten-second paragraph scanning. Not enough time.

Lines are close together, big fingers tend to hit more than one line. Then no time to change answer and shift next.

Especially those in land navigation.

Understanding abbreviations for word. Sometimes I would get so frustrated I would put wrong answers because of abbreviations.

Staying awake, due to working hours.

The paper lessons took time.

Math word problems, but I will have it done before I get out complete JSEP.

After looking at the screen for long periods of time.

My eyes got tired after staring at the computer for too long.

Negative numbers and algebra should be explained more.

I thought the lessons were very useful to me.

Some was difficult but understanding from many points of view was the key.

19. Please tell us how useful the learning strategies lessons were by circling the letter that best matches your opinion.

I like the motivational skills; it made me look forward to passing all my tests the first time.

Could have used more in problem solving. Reading comprehension could have expanded more in detail on finding the topic matter.

Reading and comprehension questions were confusing. They didn't seem to match the answers given. (Some of the questions).

I felt some lessons were too easy, but overall it was a great chance to refresh and learn more.

They are set up very good.

Overall they helped in a positive way.

We should be able to see and use our test results to better ourselves.

There were limited explanations when the computer showed me what had been wrong.

I think the lessons were very useful. The lessons were written good.

Should have more problem solving dealing with math problems, because this is all that is on the TABE tests.

I'd like to take some reading comprehension because I feel I'm weak and need strengthening.

21. What do you think about the lessons assigned to you in JSEP?

The lessons were not all easy, at times some of the material presented I had never seen before. Therefore it helped me a lot.

Other lessons should be chosen for one's MOS.

Not finished all the way with JSEP. So I won't answer. Some of the lessons I needed, some I didn't.

Most of the time.

Some lessons were the ones I needed to take but some were useless to me.

I guess they were good enough.

Simply because I learned something new with each lesson. I really needed the math lessons, but some of the others are too easy.

They were the ones I wanted to learn.

They gave me a lot of good methods I had forgotten and enhanced my knowledge to learn other calculations.

Need more problem solving.

Everything fell into place, day by day.

25. What kinds of problems did you usually ask your instructor about?

Problems with tests; sometimes the answer would not be accepted.

Paper-based lessons.

What the computer wanted.

She assisted some on the paper-based lessons.

Was always there when I needed a helping hand and kept encouraging me when I was down to drive on.

The instructor was very helpful and always monitoring my progress.

Gave good step-by-step instruction along with the computer.

Also explain things in the computer way.

29. How would you recommend JSEP be used?

Both programs, teachers and computers should be used for a clearer view.

I feel good about JSEP. It's self paced. Has some problems that will be worked out as you'll learn and do.

The computer is fine but sometimes a teacher can do a better job (explaining, that is).

A teacher is very valuable to explain when confused.

BSEP is a waste of time and money. You can't learn things you forgot in 2 weeks.

I've never attended BSEP but heard it was boring.

32. Was there anything that made your feelings change?

Using the computer more.

It gave me a chance to feel my way and understand the best method for the test at hand.

I learned some skills and refreshed some old skills.

Because when I first started JSEP I didn't understand the class but now I do.

After I started working the lesson, I got involved. The more I got involved the more I wanted to do.

Therefore I spent as much time as possible working on JSEP.

Boring lessons.

Yes, I know that in the future I will need to refresh myself and I hope JSEP is there.

Some material was too repetitious and long and ridiculous and made me feel stupid, or insulted my intelligence.

Pushing buttons for 4 hours 5 days a week.
Some of the tests in the lesson.
Sometimes I would become bored, disgusted at messing up
or forgetting how to do a problem or problems.
When I began to notice an improvement in my weaker
subject.
I have never been to BSEP.
Refresher course.
The lessons got very difficult toward the end.
Hand and hand with the instructor.
The math word problems (smile)
To complete it.
The long hours in front of the computer is tiring on the
eyes; I missed the classroom conversations.
Too many questions on common tasks and not enough on
math skills.
Stay with teachers; computers just don't cut it.
It refreshed my memory.
I enjoyed coming here first, then to work.
You don't use many of the keys on the computer.
Looking at the screen for an hour is tiring and the
lessons get boring.
After a few days with JSEP I understood its purpose.
The use of the computer not let you go on until it sure
you could pass the test on different subjects.

33. In what ways has taking JSEP helped you or caused you problems?

Learn more on common tasks.
Overall it was a good course. I would recommend it to
others.
Makes me learn on my own pace.
I feel JSEP has great intention and teaches lots. If I
was ever confused it was because of the computer, more
probably.
Overall, JSEP helped me more than caused me any
problems. It refreshed my mind on different things.
I liked the course.
It was a major problem as far as time consuming. My
supervisors nagged me every day about when I would
finish. Yet, I was told this is a self-paced program.
Enabled me to use the computers.
When I take the test to improve my GT I will know how
much I comprehend.
It helped me review a lot of things that I was not clear
on.
I've enjoyed the session a lot; it may help me dearly in
my military career.

34. Would you like to change anything in the way JSEP is set up?

Go deeper into lessons than just the basic everything.
More math and vocabulary lessons.

More job skills.

When taking the test, let us know what we did wrong so we don't keep making the same mistakes. Plus there is too much waiting around for the drawing to get done.

I think that a short review before a test should be offered for those who are not familiar with a certain lesson.

Change the ten-second paragraph scan to at least 15 seconds or more!

By adding more lessons dealing with vocabulary and reading comprehension.

Enrolled learn BSEP as is and throw away JSEP.

Some of the lessons I think it should concentrate on ASVAB lessons only and a few on common tasks.

Eliminate the material that doesn't refer to one's MOS and eliminate all ridiculous lessons (such as lessons that aggravate you making you do the whole lesson over again when it's . . .

I like to have some class lessons with the teacher.

For people to take it every other day.

The way the tests are given; the pretest should be given after a slight review.

I would break the program by half teaching with the computer and half with the instructor.

I would say the tests in general need to be worked on some more; other than that, it was OK.

I would give the soldier more of what he/she needs from the JSEP.

Give examples, or lessons, before pretest. One word can change a correct answer.

I wish the computer would tell me what my test mistakes were.

The way each lesson has only a certain number of exercises. I would make it so that if an individual wanted to get more practice he could go back to a specific lesson and work on weaknesses.

Students at the end of each lesson or test should be shown what they missed and how to do it right. This way they will know and learn more in the end.

I would let the computer show what answers are wrong on the test, and give an illustration on how it wants some of its questions answered on what form.

If you are off duty you should be able to wear what you want.

The way that the final outcome of the answers are given. Just let the soldiers know what questions were wrong

because they may come across it again, and if they don't know it was wrong the first time they will get it wrong again.

Let us see test results on screen and give a review whether we passed the test or not.

I would have classes in the morning and afternoon; in other words, classes all days (one student) morning and afternoon.

The computer lesson, the ones which are difficult and try to make them easier to understand.

Add it to the BSEP program.

A person should be allowed as much time in the other portion of JSEP. Because it is most helpful. I would like to say I enjoyed the program but my supervisor made it very hard on me as far as adoption in the program, they want me in and out. But I was interested in learning and doing well on my tests.

They almost drove me into getting out after 2 months.

We should be able to see our JSEP test results to better ourselves. If we knew what we got wrong then we could be 100% next time we see the problem. This is with pretests.

Make fewer unnecessary graphics.

More on math skills, less on common task questions.

I would incorporate some classroom instruction as well as computer lessons.

Have class with teachers, not computers. They can't answer as well.

I think JSEP should be set up so that most of the material is dealing with the GT part, and the rest on your job skills.

When the computer is drawing and you have already finished reading the paragraph you have to wait until the picture is done.

Have headsets and computer material synchronized to explain problems and tests. Let problems missed be seen.

Have more paper tests in math and vocabulary at the beginning since most people take JSEP to improve their GT score.

When you retest, retest only what you didn't understand; not the whole thing from scratch.

More hours.

Explain lesson more clearly.

35. Please rate the following JSEP elements. Circle the letter which best represents your opinion.

Get away from the basics. Test the knowledge of a soldier then go from there.

The program needs to be set more toward the MOS for that soldier than what it is. Because his or her MOS can be a life-giving or -shaking thing.

The comment that I gave on the last part should be enough.

To be able to go back in a test and learn what you had done wrong. (Attention, or didn't know proper way)

Just eliminate all unnecessary material, (lessons and questions).

Look at page 10, #34.

More specific information on paper-based lessons.

The computer could respond a little faster.

Extend it a little longer so we could finish all our lessons.

Don't treat us as stupid.

I would let the JSEP class be taught by a teacher because the computer gets boring.

The word math problems seem hard but that's because I haven't had them in a long time (hope smile)

No comment.

The program is good to refresh skills that we don't use in our military jobs, but need for advanced education.

They were pretty much OK; not much to say.

It should be a little more difficult. Most of this stuff is basic and we should already know this.

JSEP is not just for soldiers; it's good for civilians also. It's mostly basic that refreshes your memory.

Encourage people with low GT scores to take it.

Give more variety like food service classes, mail clerk classes, club management weekend classes, night classes, etc.

Show your mistakes on the test.

Everything was fantastic; I had no problems in it and I think it ought to stay.

More computers, and more time.

36. Additional comments.

I feel that the more the program is geared towards the MOS of soldiers the more beneficial it will be as far as a learning tool, because a soldier is interested in his job and not the surrounding MOSs.

The computer is very helpful in the area that I have studied in.

Most of the time everything is well explained.

Sometimes you're not sure how they want a question answered and you get it wrong when you knew the right answer.

I have seen an improvement in my job performance since I

began JSEP. I feel that this is a motivational skill for all soldiers.

Even though these classes are time consuming, I feel that everyone should have the opportunity to experience the classes. The knowledge that this class has provided for me is immeasurable and will prove beneficial as I progress further in my field. I have enjoyed being a part of this course and feel it should be offered post-wide.

I think the instructors are great. These two have been supportive and understanding of me from the beginning. They both show professionalism and self-esteem that makes them outstanding instructors. Thanks, Guys!

I think it's a good program. The computer has a few errors. They [need] to concentrate more on ASVAB testing.

Although I may disagree with JSEP in some areas, I still think it's a good program but I am uncertain about the effectiveness of material. However, I was able to learn some important information that could help me in life, and I am grateful.

I feel overall JSEP is headed in a great direction. Helping people who want to be helped.

I liked the JSEP program from an overall viewpoint. Some of the lessons were what I needed but some were useless because I already know them or it didn't have anything to do with some of the things I needed to know.

It is a very good system. I would recommend it to everybody.

No comments. I thank you, too!

Even though JSEP was long and some material could be eliminated for [it is] too time consuming. I think JSEP is one of the best programs the Army has come out with. If a computer can teach a slow learning person like me, the Army has really outdone itself.

Students should be able to ask and answer the computer's questions. This idea if put into effect will make the JSEP class perfect, besides the computers problems.

JSEP courses were really helpful for me to get more knowledge of military education. However, the main purpose I had was increasing my GT scores so that I had been bored while I was in JSEP.

I feel JSEP is a good program. But when your math skill needs improvement, more of this should be emphasized. Common tasks are good, but does not have much to do with the GT test.

My instructor was very pleasant and helpful during the entire enrollment period. The JSEP program has some kinks that need to be improved, but overall I like it.

I think people should teach people and leave computers to the scientists.

Get rid of BSEP.

When I had BSEP, 20 people were in the class. Three out of the 20 people advanced. The rest of us didn't go on because we didn't score high enough. It's hard to jump into something you haven't really thought about for a long time, and accomplish it in 2 weeks.

This has been a pleasure for my learning experience and would love to do more with this computer.

APPENDIX E

Instructors' Responses and Comments--

JSEP Instructor Survey

Table E.1. Responses to JSEP Instructors' Survey (N=11)

<u>Item</u>	<u>No.</u>	<u>Pct.</u>
Teacher Characteristic		
Highest Degree Completed		
Bachelors	8	73
Masters	3	27
Have Studied		
Adult education	6	55
Educational foundations	8	73
Teaching methodology	8	73
Special education	4	36
Had Prior Experience		
Teaching ABE/GED	7	64
Teaching with computer-based instruction	4	36
Using computers in general	6	55
Teaching enlisted personnel	11	100
Have Taught BSEP or JSEP before		
No	3	27
Yes	8	73
If yes, for		
1 year or less	1	9
2 years	3	27
3 or more years	3	27
Have Taught JSEP for		
Less than 6 months	3	27
6 months to 1 year	6	55
More than 1 year	2	18
Received training from		
FSU staff person	5	45
JSEP instructor/education staff	4	36
No training	2	18

Table E.1., cont.

Item	How Important?*			Covered?	
	Important	Some	Not	Yes	No
Importance of Training Area					
Operating the computer	100	--	--	80	20
Getting in and out of JSEP	91	9	--	80	20
Registering a soldier	91	9	--	80	20
Dealing with computer problems	91	9	--	80	20
Helping soldiers with learning difficulties	64	36	--	44	56
Training other instructors	55	45	--	40	60
What to do - soldiers stuck in lesson	100	--	--	80	20
Managing JSEP classroom	70	30	--	70	30
Operating learning strategies module	40	60	--	60	40

*Percentages based on number responding to item.

Table E.1., cont.

Item	Percent Rating Preparation:*			
	Very Good	Fair	Poor/None	Not Apply
Preparation in Training Area				
Operating the computer	82	9	9	--
Getting in and out of JSEP	82	9	9	--
Registering a soldier	73	18	9	--
Dealing with computer problems	27	64	9	--
Helping soldiers with learning difficulties	64	18	9	9
Training other instructors	27	18	18	36
What to do - soldier stuck in lesson	60	30	10	--
Managing JSEP classroom	91	--	9	--
Operating learning strategies module	27	45	27	--

*Percentage based on number responding to item.

Item	Percent Reporting: Had this resource		Helpful	
	Yes	No	Yes	No
Resource Availability				
Telephone contact - JSEP resource people	91	9	82	--
Computer contact - JSEP resource people	55	45	55	27
Training workshop	18	82	55	--
Meetings or conferences	9	91	45	9
Instructor's manuals	91	9	73	9
Other (other instructors)	--	9	9	--

Table E.1., cont.

Item	Percent of Time Spent:		
	Average	Highest	Lowest
Task			
Showing soldiers how to use program and hardware	13.2	25.0	5.0
Circulating and observing soldiers	27.8	50.0	10.0
Helping with program or hardware problems	9.6	15.0	2.0
Record keeping and administrative	18.9	50.0	0.0
Using supplemental materials with soldiers	5.6	20.0	1.0
Answering soldiers' questions about lessons	17.2	30.0	5.0
Other (write in)	6.7	40.0	0.0
Paper lessons (1)	40.0		
Briefing students' supervisors (2)	5.0		
Counseling (1)	15.0		
Computer maintenance (1)	5.0		

Table E.1., cont.

Item	Percent Rating As:					Can't Judge
	Excellent	Good	Needs Some Improvement	Poor		
Aspect of JSEP						
On-line instructional program (lessons)	18	27	45	9	--	
Paper-based lessons	--	45	18	27	9	
Soldier management system	36	36	9	9	9	
Hardware (computers and other equipment)	18	55	18	9	--	
Classroom setting (room, light, set up)	9	27	36	27	--	
Manuals	45	55	--	9	--	
JSEP training	18	45	9	9	9	
How best use JSEP (%)						
JSEP replace BSEP	18					
JSEP as part of BSEP	64					
Do not use JSEP	--					
Not sure	--					
Other (use for MOS and CTT training; combine with teacher and supplemental lessons; add traditional instruction and replace BSEP; add short, hands-on test-taking class)	27					

Additional Instructors' Comments

The instructors were asked to add any comments about JSEP they pleased to the written survey, and most did so. One instructor simply wrote, "my students enjoy JSEP." Others were more descriptive. One stated:

I have taught several classes from seventh grade through adult and I find that the Job Skills Education Program works best in terms of interest and retention. It does not appear to be a chore to the student. I also find, from having taught, that the best way to learn is to teach. JSEP gives the student an opportunity to "teach" himself, thus he gets more from the lesson.

Another was understanding about problems, writing that "I believe JSEP has a good future. Of course, since it is so new, improvements need to be made, but this is to be expected." Other evaluations were:

I feel JSEP is a good program. It will help the soldiers improve in areas such as reading and grammar, which are very difficult to do, as well as in the SQT. It should be given a better reputation and a broader use than it has now. I believe it can be a very valuable and effective learning tool for the Army.

A writer who identified herself as a substitute instructor said:

JSEP has proven itself effective on this post in large part due to a very conscientious instructor. As JSEP is further developed, I feel it important to continue to provide good instructor training and to maintain a good student-instructor ratio so that an instructor can continue to monitor closely individuals' problems and progress.

Another combined praise with a recommendation.

Most JSEP lessons are excellent. At least 90 percent of our students prefer JSEP to classroom instruction. I think it is a great program that will be even better when the final lesson revisions are complete. Paper lesson 19b needs to be eliminated completely. It is too difficult for the students. None of the students have ever

been exposed to logarithms and they will never use what they learn. It is very frustrating for the students.

Three other writers included broader recommendations.

"JSEP is a very good idea; however, the current system does nothing within the instructional area. Students are so-called "pre-tested" rather than receiving a diagnostic test which determines weak and lacking areas that are "addressed" by both instruction and remedial training. The paper lessons are not of any true value to the soldier's learning or training program. The paper lessons should be designed to teach the student, and not "reprints" of information or documents available through Army manuals and publications."

"100% of the soldiers that walk in my door want GT improvement, as well as their commanders. It is my opinion that although "JSEP was not written to improve GT scores," as I have been told, a needs analysis should have revealed this as a crucial part of the Army's program in basic academic skills training. If JSEP is a replacement program for BSEP, then it should meet the needs of these soldiers. If it is supplemental to BSEP, then how will the Army educational system ever provide standardized, quality instruction when BSEP will still differ from post to post? Beyond this problem, I am satisfied with the design of the curriculum of JSEP. The self-paced, individualized instruction allows soldiers to gain confidence in skills they thought they were incapable of doing before. I also believe it truly helps them improve both study and test-taking skills, in and out of JSEP. The management system is another plus for JSEP. It's great to have the grades and progress recorded automatically -- if only I could keep attendance records on it, too! Certain options on the menu are still unavailable; however, I hope this will be remedied soon. As a teacher I miss the interaction with the student that I had with BSEP. It is much more difficult for me to follow their progress and diagnose any deficiencies. I also find myself feeling guilty about not knowing how they're doing or where they need help."

"Change the questions in this survey. This survey suggests that JSEP is a purely academic educational tool, which is incorrect. Over 40 percent of my students are

enrolled in their MOS or team training. JSEP has great potential in teaching soldiers their MOS skills in addition to GT improvement educational skills."

A